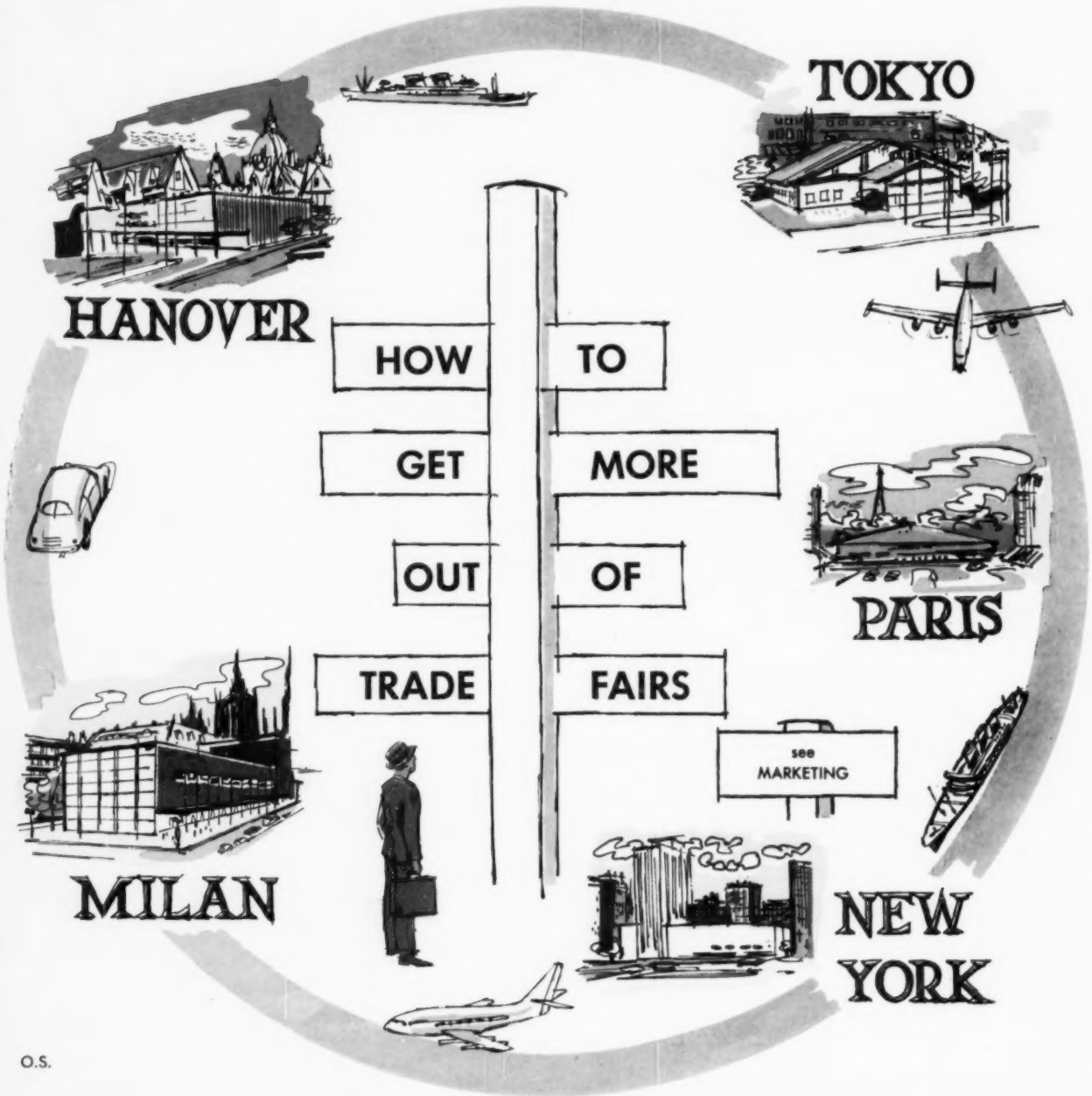
International Management Digest

JULY 1958
ONE DOLLAR (U.S.)

THE McGRAW-HILL PUBLICATION OF WORLD BUSINESS INFORMATION



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LOOKING AHEAD

World Affairs

"As France Goes . . ."

Patience, a quality not unknown to businessmen dealing with France, will be required to an even greater degree in the months ahead.

De Gaulle's government will be preoccupied with constitutional reforms, Algeria, and possibly political strife. A period of uncertainty is in store for business.

Look for a moment at the French economic situation.

The political problems of the Fourth Republic have masked the tremendous economic progress made in the last decade. Across the nation, new modern plants are rising; productivity and profits have grown; personal consumption is up and unemployment has dropped to a tiny fraction of the workforce.

Yet these advances have cost dearly in terms of the balance of payments. Exports have lagged as the nation lives beyond its means. Now, soaring imports and the inflationary costs of the Algerian War have brought France perilously close to bankruptcy.

Can the de Gaulle government bring order to this financial disarray? Outsiders think that it can, if (and that is a big "if") the nation is not paralysed by labor unrest.

The prescription is familiar, and unpopular: "Belt-tightening," austerity. Finance Minister Pinay may have to slash imports mercilessly, impose stiff new taxes, slow down business expansion, possibly freeze wages and social security benefits. You even hear talk of another devaluation.

None of these measures would help the cause of European unity. At the very least, the economic integration time-table will be delayed.

. . . So Goes Europe

Even before the May political crisis, France had been "dragging its feet" on economic integration.

True, the European Common Market treaty was signed and ratified. But there were signs that France would try to invoke "delaying" clauses as the first ECM tariff-cutting, scheduled for January 1, approached.

It is unlikely that de Gaulle will try to scrap the treaty. His attitude is more apt to be one of waiting until present French economic woes have eased before acting on France's ECM obligations. So far, at least, de Gaulle seems prepared to respect those obligations.

The scheme for a Free Trade Area linking the rest of Europe with the Common Market "Six" has been battling French objections right along. The treaty drafters have patiently tried to find compromises. They had hopes for an "agreement in principle" by January 1.

Now those hopes seem slender indeed.

Yet Swiss, British, Scandinavian, other European businessmen insist that failure of the plan will be disastrous to the trade and future political unity of Europe. They fear a continent broken up into discriminatory blocs, sacrificing all the hard-won progress of the past decade.

So you hear Europeans saying to France: "You underestimate your ability to compete. Your rising industrial efficiency, your high productivity and inventiveness, will stand France in good stead in larger, more competitive markets. So why don't you cooperate with us?"

Turn the page for more WORLD AFFAIRS

Aiding, Trading, Lending: in the U.S.A. . . .

A series of crises abroad—and especially Latin American attacks on Nixon—has forced a reappraisal of Washington's foreign economic policies. Indeed, Venezuelan stone-throwers can take some of the credit for hastening passage of the U.S. trade and foreign aid bills.

Washington now plans a coordinated approach by—

—Urging increased quotas of member nations in the International Monetary Fund. This will help ease the "liquidity" crisis (IMD, June, p1).

—Using the Export-Import Bank for more short-term balance of payments loans (such as the recent $103-million credit for Colombia). Note, too, that the bank's lending authority has just been raised by $2,000-million.

—Increasing assistance to less-developed countries. Washington plans to ask Congress for a much larger Development Loan Fund next year.

—Supporting the plan for a new International Development Assn. allied to the World Bank, to make long-term, low-interest loans repayable in local currencies.

—Consulting more closely with nations hurt by low commodity prices (see p10).

. . . in the Commonwealth

Britain and its Commonwealth partners are also reviewing trade-aid problems. In preparation for the Commonwealth conference in Montreal in September, they have been discussing how to—

—Expand trade among themselves, possibly via an improved system of credits in intra-Commonwealth commerce.

—Mobilize development capital and, most important, coordinate more effectively the development plans of individual countries.

—Stabilize raw material prices.

—Work out a relationship between themselves and the Common Market-Free Trade Area in Europe.

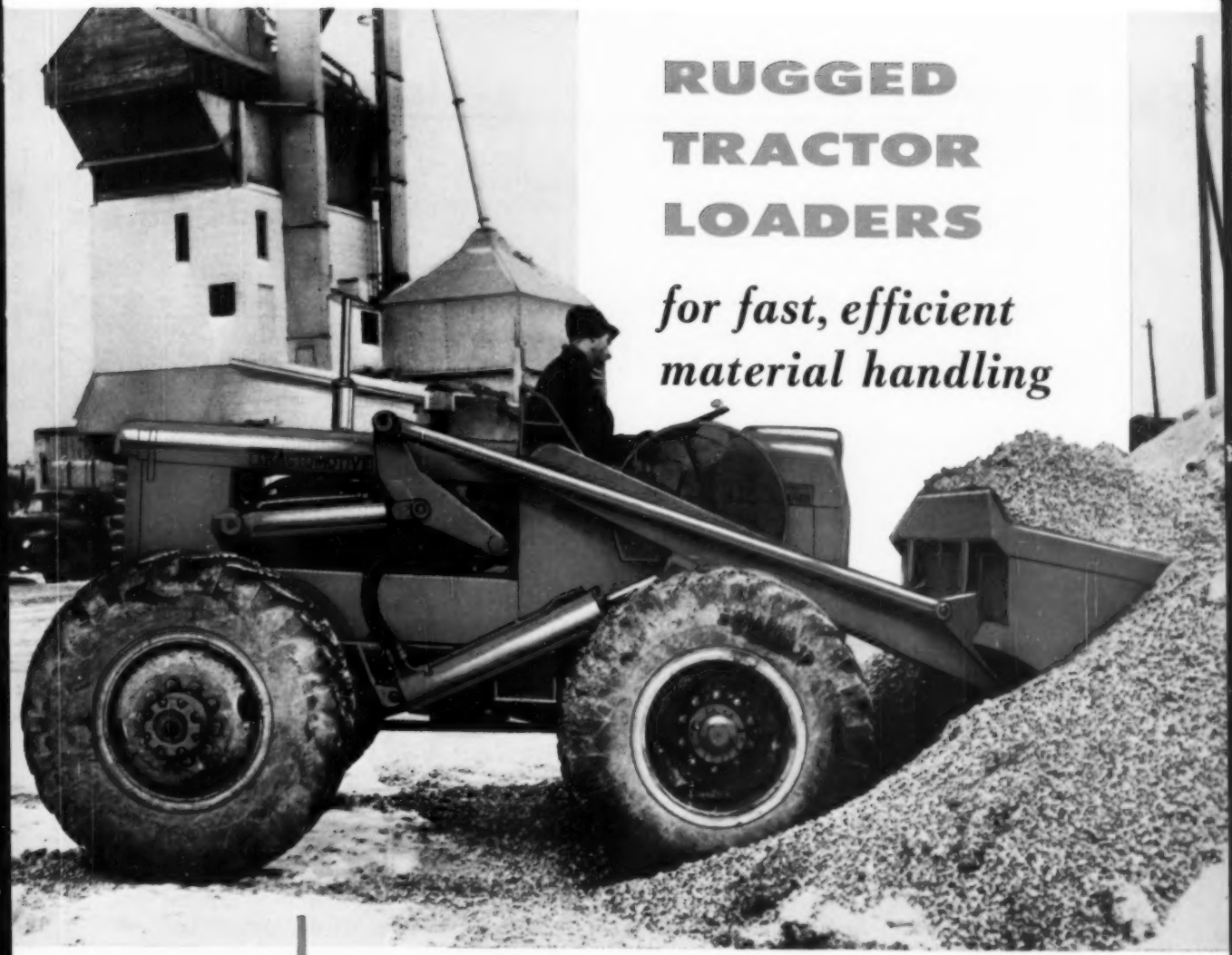
The Trends of Business

India's new "Wealth Tax"—levied on total wealth above Rs. 200,000 (about $42,000)—has had an unimpressive debut. Only 37,906 individuals and companies out of a total population of 380-million were found to be liable, and collections have amounted to only half the estimates. Businessmen ask: Are the returns worth it, considering the impact of the wealth tax on the investment climate?

World population will double within 40 years say UNO population experts. The most significant demographic fact is a continuing decline in death rates, which allow a net population rise of 1.6%. Other facts: (1) Latin America leads in percentage growth, at 2.5% yearly; (2) Dutch babies have the greatest life expectancy, Indian the least; (3) New York remains the world's most populous city, staying well ahead of Tokyo, London, Paris, Shanghai.

Management Calendar: It is not too late to make plans to attend the 1958 European Management Conference, in Berlin, October 1-3 . . . or the Second Inter-American Management Congress, scheduled for November 16-21 at the U.S. resort city of White Sulphur Springs. INTERNATIONAL MANAGEMENT DIGEST will gladly send you details.

Cause & Effect: U.S. automakers have pretty well decided to build a smaller, lighter car—larger than the tiny Europeans, but with less power and greater economy than standard Yankee models. They will appear late next year . . . The Volkswagen was the fourth ranking car in California in March—outselling all makes save Chevrolet, Ford, Plymouth.



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Diesel: 38 brake hp
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2950 kg (6,500 lb) diesel

TL-10
CAPACITY:
0.76m³ (1 cu yd)
ENGINE:
Gasoline: 63 brake hp
WEIGHT:
5400 kg (11,900 lb)

TL-11
CAPACITY:
0.86m³ (1⅛ cu yd)
ENGINE:
Gasoline: 63 brake hp
Diesel: 77 brake hp
WEIGHT:
5125 kg (11,300 lb) gasoline
5220 kg (11,500 lb) diesel

TL-12**
CAPACITY:
0.86m³ (1⅛ cu yd)
ENGINE:
Gasoline: 63 brake hp
Diesel: 77 brake hp
WEIGHT:
5490 kg (12,100 lb) gasoline
5580 kg (12,300 lb) diesel

TL-20**
CAPACITY:
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The 20th Century Atlas

A distinguished Argentine industrialist, Dr. Pablo Bardin, has set out a challenge—and the prospect of immortality in stone—to businessmen. At the May convention of the International Advertising Assn. in New York, Bardin said:

"I have frequently observed that in most countries are to be found statues of men and women who have helped humanity in varied aspects of the struggle for freedom. There are statues of soldiers . . . mounted on a fiery steed; there are statues of statesmen, . . . in an attitude of deep thought.

"But I cannot recollect ever having seen a statue of that very useful member of society—the common or garden businessman. And yet it is on the economic front that the last great battle for freedom is being fought today; and it is the businessman who bears the heat and burden of the struggle.

"If the time ever comes when governments deem him worthy of a statue, it will not be necessary to . . . think of a suitable form for the statue to take. All that was done years and years ago . . . I refer to the statue of Atlas, who carries the weight of the whole world on his shoulders."

Lest businessmen start imagining themselves cast in heroic bronze, they should note some other points made by their Argentine colleague. Before the statues must come deeds.

In Dr. Bardin's view, the deed that most needs doing by business is the promotion of economic integration among nations. And while he was speaking of Latin America, his remarks are not wide of the mark anywhere in the world.

Economic freedom cannot grow in an atmosphere of restrictions, artificial frontiers, and economic nationalism. Bardin stresses the difference between that kind of nationalism—an anachronism in the 20th Century—and love of country, desirable at any time. Businessmen should be the last people to confuse the two.

Yet too often, businessmen can be found waving the tattered banners of economic nationalism. Too often they are content to take shelter in comfortable protected markets when expansion and diversification would benefit not only themselves, but everyone else. Too often they insist that special privileges stand between themselves and competition.

Bardin tells the story of an Argentine cattleman he knew. "Yes," said the cattleman, "I am interested in the idea of the Common Market. In fact I am trying it right here. My men at the ranch are now building a gate in such a way that my cattle can easily graze on my neighbor's land. But my problem is—how to keep the neighbor's cows from getting at my pastures?"

That attitude will die hard. But die it must. Those businessmen in Europe and the Americas who are helping to kill it off are the ones who will deserve the statues.

Paul R. Miller, jr.

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INTERNATIONAL MANAGEMENT DIGEST

INTERNATIONAL MANAGEMENT DIGEST (formerly McGraw-Hill DIGEST) Overseas and Latin American Editions is published monthly by McGraw-Hill International Corporation. James H. McGraw (1860-1948) Founder. Circulation in all countries of the world except the United States and Canada.

Executive, editorial, advertising and circulation office: 330 West 42nd Street, New York 36, N. Y., U. S. A. Donald C. McGraw, Chairman of the Board; Nelson J. Bond, President; L. Keith Goodrich, Vice-President and Treasurer; John J. Cooke, Secretary; A. R. Venezian, Vice-President and Circulation Coordinator.

Publication Office: 99-129 North Broadway, Albany 1, N. Y., U.S.A.

Subscriptions may be ordered through Fulfillment Manager (See below). **Subscriptions to INTERNATIONAL MANAGEMENT DIGEST are solicited only from management men in business and industry. Subscription orders must indicate position and company name.** Subscription rate $5.00 for 1 year; single copies $1.00 (U. S. currency). Second class mail privileges authorized at Albany, New York. Printed in U.S.A. © Copyright 1958 by McGraw-Hill International Corporation. All rights reserved. Reproduction of items in full or part without written permission prohibited in all parts of the world.

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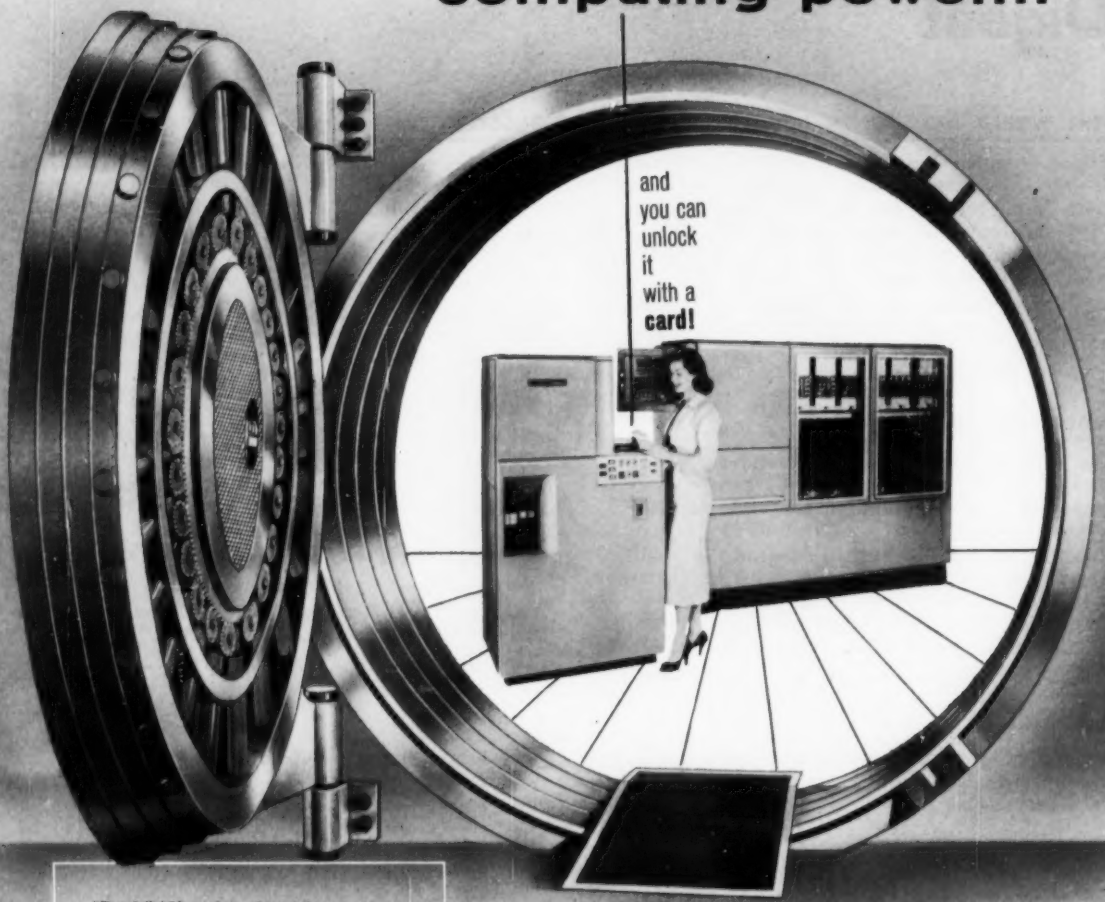

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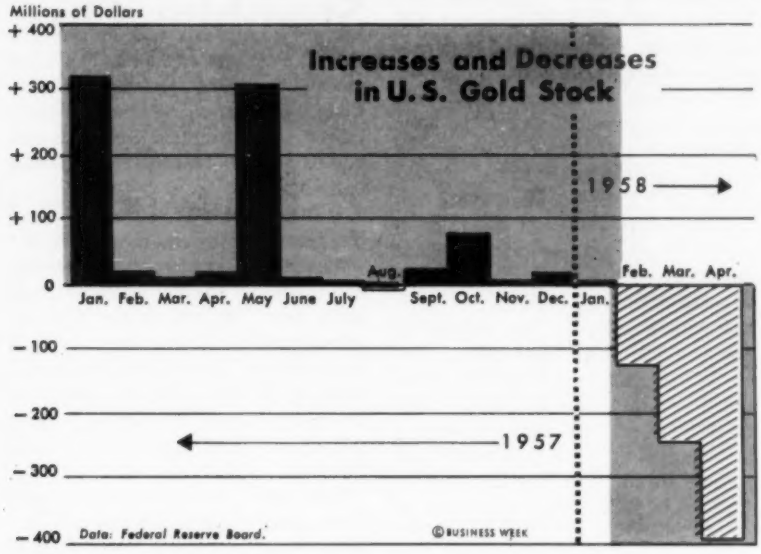


Flight from the Dollar?

It does not seem likely. But some bankers and businessmen are hedging their bets.

SINCE FEBRUARY, gold has drained from the U.S.A.'s reserves at an unprecedented rate. As INTERNATIONAL MANAGEMENT DIGEST went to press, other nations had added nearly $1,200-million of U.S. gold to their stocks, easily erasing the $832-million the U.S. gained from the world last year.

This gold movement, if it continues, could be of major significance to businessmen everywhere:

It could portend a massive flight from the dollar. It could stimulate counter-measures that would cause U.S. imports to fall. It could bring a rise in the price of gold.

And it could mean none of these things. Indeed, the odds are very much against such developments. But because the bare possibility exists, businessmen are wondering, and some of them are now "hedging their bets"—with gold.

Many economists predicted that a slow-down in American business would bring the return of a severe dollar "gap," with the non-Communist world losing a vast amount of reserves to the U.S.A.

Not yet, at any rate. Since the U.S. recession began, Washington has been the big loser of reserves. If the drain continues, the U.S.A. could face a gold outflow of $4,000-million in 1958.

Those who take fright at every gold movement warn that such a drain would force the U.S.A. to (1) curb its imports, or (2) embark on an inflationary course that would lead to a rise in the price of gold. Others point out that foreign nations — through their dollar holdings — have a "mortgage" on $13,000-million of the U.S. gold stock of $21,800-million.

This is because the U.S. Treasury stands ready to buy or sell gold to foreign central banks at the price of $35 an ounce. If every nation decided to turn in its dollars for gold at once, this would leave a bare $9,000-million to back up the U.S. money supply—and bring a severe crisis.

You get a more optimistic story from American Treasury officials. The nation's gold position, they say, is "extremely comfortable"—amounting to 55% of the non-Communist world total. As it stands now, the stock provides a 45% currency backing, against a 25% legal minimum.

There is little chance of a "massive" flight from the dollar, continue these U.S. observers. World businessmen are used to conducting much of their business in dollars. The gold loss today is merely temporary—and there have been six such cycles since 1946.

Why even a temporary drain? One reason often cited is the fact that many countries are right now enjoying a surplus in their U.S. trade. Despite the recession, U.S. imports have held up rather well while exports have declined. Thus some countries are earning dollars, using them to buy gold.

The decision to buy gold is not surprising. Last year, when the U.S. Treasury bill rate was over 3%, holding dollars was more profitable than holding gold. Now, with the rate around 1% there is less incentive to keep dollars.

Despite these arguments, there is clearly more to the gold drain than interest rates. Some banks and businessmen appear to be hedging against possible, if not probable, dollar troubles.

The most pessimistic believe that if nuclear war broke out, gold would have more value than the dollar; or if the U.S.A. is hit by an economic catastrophe, the dollar would be devalued.

There are less drastic considerations. Some foreign central banks are reported concerned lest Washington's efforts to halt the recession cause renewed inflation. So they hope to protect purchasing power with gold.

There has been an increase in private hoarding as well. Some investors are reported to be buying free-market gold abroad as a risk-free bet against dollar devaluation.

In the old days of the gold standard, a country had to take corrective steps when it started losing gold. The domestic money supply was tightened, imports dropped. Soon gold began flowing back.

Stopping a gold drain is not so easy today—especially for the U.S.A. With the country in recession, U.S. monetary officials cannot allow the gold decline to restrict the home money supply. Equally important, they believe they must work to prevent the re-

cession from spreading overseas. If the U. S. embarked on a rigid gold standard policy, the rest of the world would suffer.

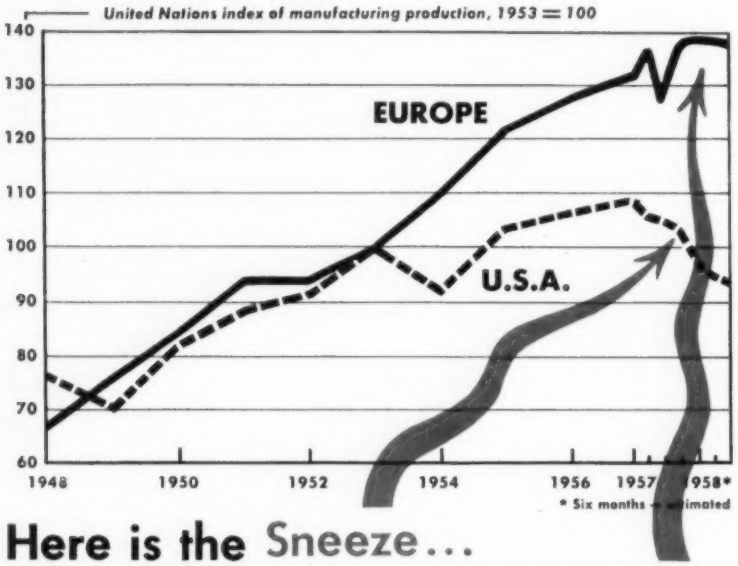
Some economists are convinced that raising the price of gold is the best way of preventing trouble. There has always been agitation for a price rise. Recently, powerful voices—in England especially—argue vigorously for a rise.

The U. S. A. maintains officially that a price rise would create dangerous internal inflation, and would incidentally benefit the Soviet Union. Washington contends that the world has been able to add to its gold and dollar reserves in the past five years. The problem is rather one of distribution. (IMD—June,p1).

It is questionable, say these Americans, whether a gold price increase would do any good. It might, in fact, accentuate the problems of some countries.

The U. S. A.'s problems are different. Its loss of gold is probably temporary, unless, of course, the current recession turns into a deep depression. As it is now, the U. S. A.'s situation is providing other nations with some protection. The U. S. A. must avoid action vis-a-vis gold that would curb international trade—or else deflate the domestic economy while the recession is still evident.

Perhaps the gold loss is healthy for the U. S. As one official put it: "There is no sense in countries building up reserves unless they ultimately plan to spend them. It is when they lose reserves, and cannot spend, that trouble comes." (*Business Week, May* 24, *p*68). ●



Here is the Sneeze...

...but no Pneumonia

"WHEN the United States economy sneezes, Europe catches pneumonia" was an article of faith among businessmen prior to World War II. Has it been true since?

So far, no. In both the 1948-49 and 1953-54 U. S. downturns, Europe was insulated against American recession breezes (chart above)—primarily by heavy capital investment caused by tremendous pent-up demand.

Today, Europe is in a different position; the trend is one of "stability." Europe, while more vigorous, does not have the economic momentum that it had in 1949 and 1954. Capital spending will hardly rise this year; production is slowing; exports are off.

So note these factors: First, the possibility of the U. S. recession crossing the Atlantic is stronger now, even though the European reaction could be mild; second, the time factor is crucial. If the U. S. business downturn fails to reverse by the fourth quarter of this year, economic activity in Europe will not be able to hold to present levels.

Atomic Power Stumbles On

PLANS FOR ATOMIC REACTORS blow hot and cold. The conflicting predictions, estimates of the world's power needs, construction plans and postponements leave businessmen baffled.

On the one hand is the inescapable fact that every nation in the world needs more power sources, and much of this future power will come from atomic plants. On the other hand is the equally inescapable fact that atomic power is expensive. Even where coal and oil costs are high, costs of producing atomic electricity can be substantially higher.

The past month's news reflects these two conflicting facts. The long-range picture for atomic power plants is very promising—with new projects constantly being formulated—but the short-range picture is blurred. Plans of British and American reactor-builders have been revised, suspended, altered by government action or inaction.

I. Latin American Plans

Atomic power may not be available to Central and South America in the near future. This became clear in the recent announcement of American & Foreign Power Co. that it has suspended its plans for atomic-power plants for Cuba, Brazil, and Mexico. These would have been the first commercial atomic units for Latin America.

High costs underline A&FP's decision to call a halt at this time, though other factors were involved. Extensive studies indicated that construction and operating costs would be out of line with costs for producing conventional power. The firm did not feel that it was equitable to burden either power consumers or the company's shareholders with this added cost.

Contributing to the decision was the company's inability to get necessary insurance covering the proposed plants. Insurance companies are loath to take on the unusual risks of insuring atomic reactors, unless these risks are

shared by government authorities. Such official guarantees were not forthcoming in Latin America.

A&FP will continue its studies into atomic power, but with no specific plans for the future. The firm's conventional power plants will be enlarged and expanded—with an investment of about $100-million this year.

II. Power for Japan

Faced with an urgent need for new power sources, Japan appears ready to get started with an atomic building program. Whether the U.S. or Britain will build the nation's first atomic-power plant is still undecided. The Japanese have indicated a desire for one of each, with the hope that they themselves will be supplying most of their atomic equipment by 1967.

The promise that Britain may supply the first unit came after Japanese experts visited atomic facilities in England earlier this year. The mission decided on a British Calder Hall-type reactor for a $50-million, 150,000-kw plant slated for the Tokyo area. Three British Calder Hall-type reactor submit bids this month.

British plans in Japan, however, are still contingent on technical problems being worked out to insure that their reactor will be substantially earthquake-proof. At the same time, Japanese authorities and the U. S. State Department have initialled an agreement for a U. S.-built, enriched-uranium reactor.

III. Aid for Euratom

The U. S. A. has agreed on a broad program of cooperation with Euratom (the European Atomic Energy Pool). The agreement calls for a joint effort to build six or seven atomic power plants in Western Europe over the next five years. Financial assistance in the purchase of U. S. atomic equipment will be available through the Export-Import Bank.

Long-term financing was also being offered to Euratom by the British in conferences that began late in May. The British appeared alertly competitive, stressing their commercial success at Calder Hall and their equipment's use of natural uranium, more readily available to most countries. ●

In Japan, Export Cartels

. . . seem to be appearing again. Japan hopes they will help solve trading problems. But what will they mean to the world business community?

TO FEED a million more mouths each year, and to keep its economy growing, Japan must by 1965 export twice as much as it exports today—and to a world that may be more unwilling to buy.

This is the grim dilemma of Japan. To resolve it, Japan has been making a world-wide trade promotion effort (IMD—Dec,p14). And now, the nation is erecting a system of quotas and cartels in its international trade. For world business, this means:

—Japanese exporters will present a more united front. Customers overseas will find tougher bargaining, higher prices, but probably more reliable products and deliveries from Japan.

—Signs point to the future appearance of highly-cartelized Japanese export industries which will pose a greater competitive threat to U. S. and European producers in third markets.

In part, these trends are the result of Japan's problem of where to trade. Many countries discriminate against Japanese goods. The vast market in China is closed; even if it opens, many experts doubt that Sino-Japanese trade will amount to much. While South Asia is Japan's great trading hope, it is poor—though progressing.

But in the Americas—and especially the U. S. A.—Japan enjoys important sales now and hopes for bigger sales in the future.

In order to prevent "over-selling" the U. S. A.—which would stimulate higher tariffs there—Japan has worked out an elaborate quota system on U. S.-bound goods. It is working fairly well, and is being applied in other areas. But it has brought the government, through the Ministry of International Trade & Industry (MITI), deeply into the business picture. Industry generally does what MITI says. Recently, MITI is reported to have threatened the denial of foreign exchange to "encourage" trading companies to form regional associations—a U. S. Council, a Latin American Council, etc.

The quota system tends to favor larger companies; smaller producers, not able to get enough of a share of the U. S. quotas, must push their sales efforts in other markets. Occasionally, the system results in higher prices. And it is helping to re-establish the power of the big trading companies, and creating an atmosphere favorable to greater cartelization.

Indeed, many influential Japanese businessmen and politicians are calling for complete export cartels. And recently MITI began preparing legislation approving cartels formed by exporters.

Many Japanese believe there is no alternative to these methods. They say they have to regulate export sales in order to stay on good terms with the world business community, and—equally important—to halt ruinous competition among Japanese companies. Thus businessmen overseas are going to find it more difficult to play one Japanese supplier off against another and get very low prices.

Japanese argue further that cartelized "bigness" is necessary. In such a capital-short economy only combinations of business interests can put together enough money and technology to produce competitively. This is especially true now, they say, because the nation is no longer the low-cost producer in many lines.

The trend seems clear: Japan will be organizing its business on the basis of a unified presentation by each industry in foreign markets. For example, the past few months have seen (1) four leading electronics firms set up—with MITI blessing—an Electronic Development Assn. to pool patents and relieve competition in export; (2) the Japan Machinery Export Assn. plan a system of cooperative bidding on international projects to keep one member from undercutting another; and (3) the formation of a ball-bearing trading group—among others. ●

What Hope for the Commodities?

These important commodities . . .	. . . suffer symptoms of business slump . . .	. . . with no prospects for a quick cure.
Aluminum	Years of a "bull" market turn soft as production far exceeds demand. Russian exports grow. Buyers consider cheaper substitutes.	"Hard-selling" is on for new markets; producers cut expansion plans; U. S. A. talks of import restrictions.
Coffee	Government-supported surpluses pile up in Latin America; African competition grows. Prices low, may even go lower.	Producers step up consumption campaign, try export curbs. All eyes on the U. S., hoping for cooperation in stabilization.
Copper	World industry buys copper on hand-to-mouth basis. Inventories are high, prices remain low. No early signs of a strong upturn.	Production cutbacks continue in Americas and Africa. U. S. A. discusses protection and new subsidies. Long-term outlook good.
Cotton	Even expanded textile industry cannot absorb gluts. Competition from synthetic fibers hurts.	Major producers continue support policies, increase competition for foreign markets.
Lead-Zinc	Consumption down, prices plummet, inventories swell with overproduction as U. S. government buying ends.	Producers reluctant to cut production; search for new markets widens. U. S. discusses trade curbs and subsidies while U. N. O. plans study of controls.
Nickel	Mine expansion outruns demand—there is plenty of nickel now.	Price cuts offered while production decrease considered. New markets and missile and rocket field are pushed hard.
Petroleum	Exploration drive may prove over-optimistic. It is already slowing in the U. S. A. World-wide, prices are soft, and production off.	U. S. A. partially curbs petroleum imports; may go farther. Producers look to long-term rise in demand.
Rubber	Production dips as synthetic competes vigorously. Prices are weak.	New uses for natural are sought as many nations move toward synthetic production.
Tin	Demand slides far below output; Russia increases exports; U. S. A. stops stockpiling metal.	International Tin Council tightens export quotas and upholds price temporarily.
Wheat	Surpluses grow despite heavy world demand. Competition for markets nears "cut-throat" proportions.	Wheat Agreement has been supported by U. S. stocks. But there is still resentment against U. S. subsidized sales, which Canada is also trying now.

NOT SINCE THE 1930s have so many raw-materials producers shared the same woes for so long. Nor has the political reaction reflected a more urgent search for ways to ease the plight of hard-hit farms and mines.

Last month, the air was full of demands for new international commodity price schemes and for unilateral domestic protection.

Internationally, the United Nations commodity commission decided to meet in several months to discuss an emergency lead-zinc plan. By then other schemes may be before UNO. The U. S. A. assured Brazilian and Colombian coffee producers that it would lend at least moral support (and possibly more) to new production and export control talks with African growers. And Washington promised to study new production curbs with producers of copper, lead, and zinc.

At home, commodity producers in many nations sought help through more subsidies, tariffs, quotas, government purchases.

I. What to Do?

Inevitably, the current raw material problem is tied to the U. S. A. The price outlook depends to an important degree on what the U. S. A. does or does not do.

Important government officials and many economists in America say the commodity situation defies any single solution. Raw-material producing nations, particularly the fast-developing ones, have other economic headaches besides commodity prices. It would be a mistake, according to this U. S. view, to concentrate on any one problem to the exclusion of others. That would throw the economic picture even further out of focus.

So as INTERNATIONAL MANAGEMENT DIGEST went to press, Washington was planning less-than-dramatic moves on a number of fronts (see page 2):

—**A modest increase** in development loans, plus stopgap aid.

—**A new willingness** to (at least) study commodity controls with other nations.

—**Continuation** of as liberal an

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import policy as is politically possible.

—**Support** for more lending from the World Bank and temporary help in easing reserve problems from the International Monetary Fund.

The hope is that such a program can bolster depressed economies generally, rather than administer specific medicines to this segment or that, to this commodity or that.

This very general approach seems precious little to many a troubled raw-material producing nation. But it is exactly the formula the Administration is applying to its own recession at home.

II. Is 1958 Different?

The U. S. A.'s attitude stems largely from sad experience in other commodity slumps. For years, governments and businessmen around the world have been plagued by short-term fluctuations in price, and have sought to smooth out their troubles with international commodity control schemes. Some work—for a while. But business downturns have revealed serious weaknesses in all of them (IMD, May, p1).

Alternatives are probably worse. Tariff and other barriers affecting commodity movements lead only to a shrinkage of trade, with disastrous results for all concerned. Domestic commodity supports—such as U. S. farm subsidies and disposal programs, or Brazil's coffee-buying—often increase surpluses more than do international price props.

This American attitude does not mean that the U. S. A. regards the raw material recession as a very mild and passing phenomenon. On the contrary, it has contributed, indirectly perhaps, to Latin American attacks on the U. S. vice president; it has helped pave the way for the Soviet declaration of "economic war" on the West; it has slowed growth in several nations; it has begun to affect trade.

The U. N.'s commodity commission points out why the problem is especially serious now: Most under-developed nations depend for the bulk of their earnings on the export of one or two basic commodities. And rather than lessening, that dependence is increasing. "Indeed," says the U. N., "the role of foreign trade in sustaining high rates of investment. . . became more crucial last year."

There's a double squeeze on many nations: Though prices of raw materials they sell have dropped, prices of manufactures they buy have held up. Said Australia's Trade Minister: "Our trading partners—the industrial countries—have to understand that they cannot continue to buy cheap from us and sell dear to us. Apart from the question of equity, we just will not have the capacity to buy."

The United Nations also tried to review the factors that caused the slump. Among them are (1) a slowing-down of business after the rush to build up inventories in 1954-55; (2) the sudden end of huge government stockpiling, which had kept alive the stimulus of wartime demand; (3) domestic support operations; (4) the "pursuit of self-sufficiency by so many countries;" (5) competition from man-made substitutes; (6) technical advances which have allowed "significant economies" in the use of raw materials.

III. The Imponderables

Entirely aside from what the U. N. or any government plans to do about specific commodities, there are other, less controllable, factors that influence the outlook.

The U. S. recession is crucial. A real depression, spreading overseas, might change Washington's plans, bring the U. S. rushing into international control schemes. But if business levels out and an up-turn seems assured, much of the present talk may blow over.

Another imponderable is the strength of U. S. protectionist sentiment. It could gut the present trade program, open the way for many new commodity import curbs. Here Washington hopes to "hold the line," and should be able to barring deep recession.

And there is the U. S. S. R. The Soviets have sharply increased their sales of aluminum, tin, precious metals; the experts predict more will follow, though the Russians will probably not risk breaking already weak markets. And too, there is the undoubted capacity of Russia to absorb surpluses from hard-hit non-Communist producers.

IV. Long Term vs. Short Term

For all these imponderables, note the strong optimism of many commodity producers once they turn away from immediate worries.

A copper man will tell you "our future is bright as the metal itself." Aluminum producers are convinced that they have hardly scratched the surface of world demand. Agriculture producers see millions upon millions of more people to feed and clothe.

This attitude cannot be dismissed as wishful thinking. It is based on the experience of expanding population, rising living standards, growing industrialization. Producers are confident that they can expand old uses of basic commodities, and develop new markets as well. (Note how the world's lead-zinc miners have just launched an expensive new market research program.)

Thus the best hope of the commodities may lie in the longer-term task of stimulating investment and consumption. The success or failure of business and government efforts to shore up the world economy will mean more than specific stop-gap programs designed to help this commodity or that one—even though such programs may have their place.

A top-level adviser on commodity problems to the U. S. government put it this way:

"Producers of many commodities, here and overseas, are going to have to live through these troubles for a while. A lot of marginal production will fall by the boards and some people are bound to get hurt. But if we turn to large-scale stockpiling and trade barriers we may well help bring on the very thing producers fear most—a real depression.

"Governments will have to help smooth out some of the rough spots, but they cannot do much more than toss out a few crumbs."

The Economist put it a bit more cynically: "The almost bottomless American purse is still the best support a commodity can have. . . Producers less favored by the American fairy godmother will have to stick it out until confidence returns to American consumers." ●

PHOTOGRAPH OF TOWN HALL PLACE IN OSLO, FROM THE PEPSI-COLA INTERNATIONAL PANORAMA MAGAZINE

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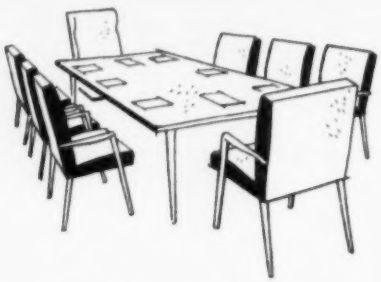

With primary responsibility to the shareholders, the board of directors plays a vital role as a critic of management. And chief executives benefit from strong, independent criticism.

The Board: Management's Watchdog

THERE HAS BEEN little written about the proper role and function of the board of directors (as distinct from the operating executives and board of managers). Why? There is no simple reason. Perhaps the best explanation is that students of business have been preoccupied with the problems of the operating executive.

Recently, however, there have been some closer looks at the board of directors. In *The Harvard Business Review* (May-June, p 41), management consultant E. Everette Smith of McKinsey & Co. bluntly told what he saw: "In most companies the Board has become more and more a legal fiction in practice. Its role as a vital organ of business has deteriorated, and in many cases it has been deposed by operating management."

Consultant Smith's own position is summed up in the title of his article: "Put the Board of Directors to Work!" He says there is a "tragic waste of talent" at the board level.

"If a company has not clearly thought out the function of the Board and structured it accordingly," Smith says, "the members can be expected to be confused and feel that they are wasting their time." And Smith thinks the average board member is unsure of his proper function.

I. Basic Business Role

To begin with, it is well to define the corporation and the basic business role played by the board of directors. As a working conception of a corporation, perhaps the best is the classical definition of the U. S. A.'s Supreme Court: A corporation is "an artificial being invisible and intangible and existing only in contemplation of law."

Within this context, the board of directors is the tangible body that acts as trustee for this artificial being. The Board's primary concern is its legal responsibility to the shareholders of the corporation.

These responsibilities were the subject of a symposium of 16 practicing directors brought together by the U. S. A.'s McKinsey Foundation and the Columbia University Graduate School of Business.

Basic responsibilities are the protection of invested capital, perpetuation of the corporation, mediation of shareholder interests, and reporting to the shareholders.

Typical questions that call for board action include such things as declaring—or not declaring—dividends, buying or selling assets, effecting mergers.

The long-range interests of the shareholders bring other broad obligations to the Board—basic policy matters such as supplying customers, continuity of employment, employment conditions, and public relations.

To meet these responsibilities, the Board delegates authority to a chief executive officer—the company president, managing director, or whatever he is called. One of the most important functions, or jobs, of the Board is to select this chief executive.

The Board is not considered responsible for the day-to-day policies or actions of the chief executive. The Board usually does not formulate objectives. But it does have the responsibility to approve these objectives. And it is responsible for the result of the chief executive's actions. In other words, it has the function of a critic—to observe, compare, and evaluate.

Board members have no right to undercut the authority of the chief executive or to exercise authority over operating personnel.

II. Insider or Outsider

A major question is the composition of the Board. There is the choice between insiders and outsiders, full-time or part-time directors.

The typical director is a "part-time insider" who also has operating duties within the company. He has the advantage of knowing the business, and there is the added convenience of his availability. One disadvantage, however, is that he may not dare to voice his true feelings for fear of alienating his co-workers. Another disadvantage: His operating problems narrow his breadth of vision, and he may confuse executive decisions with policy-making. It is difficult for a subordinate of the chief executive to reverse this relationship.

The outsider, in contrast, provides a fresh viewpoint. He is able to stand aside and judge. And he may have special talents that are not otherwise represented—financial, political, legal.

The choice, however, is not just between an insider or an outsider; it is also between a full-time or part-time director. Among larger corporations, there is a trend toward full-time directors with no operating duties. Complete freedom from managerial responsibility gives the full-time director

time and perspective for the broad-gauge thinking needed to solve today's complex business problems. The only serious drawback to full-time directors is the cost.

But companies that employ full-time directors also find it desirable to put one or more part-time outsiders on the Board—a lawyer, a financier, an industrialist perhaps—to supply an outside viewpoint and independent criticism.

III. Putting the Board to Work

Critic Smith points out that it is up to the chief executive to want a strong independent Board. "For all practical purposes," he says, "the Board is a creature of the chief executive." If the chief executive does want an independent Board, the first step is for him "to really think through what he expects of the Board." After all, Smith says, the chief executive is going to live with the Board, and he knows the needs of the company.

The chief executive must think through the functions of the various committees of the Board—"particularly the executive committee, if there is one, and its relationship to the operating management . . ."

Functions that conflict with the responsibilities of operating management should be eliminated, and the Board's functions clearly defined. "Reduce them to writing," advises Smith.

As an "innovation," Smith suggests that important data be sent to Board members in plenty of time for it to be studied.

"Is anything more destructive to a director's morale," he asks, "than to come to a meeting and be handed a batch of papers containing the agenda and some related data that are completely new to him, and have to shuffle the documents frustratingly while motions are being made, seconded, and passed?"

The data that goes to the Board should highlight significant trends and long-range plans, not short-term operations. Specific data should include information on the company's position in the industry, share of market, return on investment, return on sales income, and inventory turnover.

Inevitably, there will be areas that cannot be reduced to objective data—decisions on personalities and organizational structure. Smith suggests that the Board can learn more about management people by inviting them to make presentations in their areas of work.

A convincing case for a truly independent Board, according to Smith, can be found in their common failings.

—The weaknesses of the enterprise are clearly evident to customers, competitors and even to people within the organization before they are faced by the Board.

—Board members lack understanding of the "key profit-making factors in the industry." ●

Emphasis on the Individual

CRAWFORD GREENEWALT (above) is president of the U. S. A.'s giant E.I. du Pont de Nemours & Co. and one of the world's highest-paid managers (some $600,000 last year in salary and bonus). Appropriately, he believes the best incentive for executives is "money."

But he warns that money works only if a company provides the "first principles"—good leadership, recognition for a job well done, and "sincerity transcending the superficial joviality that sometimes passes for cordial human relations."

The opinions of top executives like Greenewalt are important, for on their level of management personal philosophy becomes company policy. In a recent series of lectures at the Columbia University Graduate School of Business, Greenewalt expounded his philosophy.

Hand in hand with responsibility and authority, says Greenewalt, goes the right to use individual methods. There are 34 men in the top management echelon at du Pont, and "no two of them will approach a particular problem in quite the same way, and no one of them could do his job as well if he were required to do it according to some preconceived, generalized executive pattern."

To Greenewalt, "conformity in behavior—good manners—is a human necessity; conformity in patterns of thought, a human danger."

"Unfortunately," says Greenewalt, "we have come in modern times to confuse the two."

In spite of this danger, there is nothing inherent in large organizations that automatically closes the door to high individual performance. The real trouble arises, he thinks, "when success causes [the organization] to be so enraptured with its accomplishments that it is moved, like Narcissus, to fashion everything in its own image."

At du Pont, a manager who stands with his hand eternally on his subordinate's shoulder is considered a poor manager. Let the man do his job his own way as long as he is successful, says Greenwalt: "Within a given area of principle, there are many ways in which a good job can be done." But if the man fails, be "tough-minded."

Du Pont's incentive system is translated into a pay structure with 16 steps from the wage-earner to top management. A promotion carries a pay increase of about 25%.

In addition, there is a bonus plan—in Greenewalt's opinion du Pont's most important incentive to high performance. The bonus is determined by the excellence of performance in a given year—and there is no guarantee of getting one the next year.

A special feature of the bonus plan: In setting individual awards, special recognition is given to men who have achieved a goal "in the face of objections from within or without." ●

Management Boards Control Planning in Medium-Size Firm

Digested from MANAGEMENT REVIEW, April, p25

ADVANCE PLANNING is not a job that can be squeezed in between telephone calls. It requires hard work, thought, and, above all, time.

It also requires an organization to do the planning. And how one medium-sized, divisionalized company goes about planning five years ahead should be of interest to every company contemplating such a program.

Over the past four years the U. S. A.'s Bell & Howell Co. has varied only slightly from its planned sales, expense, and profit budgets. Variations in expenses against budget amounted to less than 1% each year. Last year, variation from the projected profit budget amounted to 3%.

B & H's planning is coordinated by management boards, whose responsibilities are entirely advisory. These boards help to overcome the specialized outlook of operating experts in engineering, sales, and manufacturing. They do not take planning chores out of the operating people's hands, nor do they become substitutes for the regular line and staff organization. The division head is still responsible for meeting the division's objectives—but he enjoys the advice of the management boards.

I. What Is Planned

In brief outline, planning progresses something like this:

All planning, it is well to note, is done within the context of a general analysis of the economic outlook.

Financial ratios — earnings to sales, return on investment, and inventory turnover—are carefully examined and goals to improve the position are set for the five succeeding years.

A sales forecast is made on a monthly basis for the next 15-month period, and on an annual basis for the following four years.

Increases in labor and material costs are projected, along with lower unit costs through cost-reduction. Next, B & H schedules requirements for personnel, facilities, capital equipment and inventory; and needed cash flow is projected.

Existing product lines are analyzed, strengths and weaknesses compared with competitive products. B & H attempts to determine the probable life expectancy of existing products; and on this picture is overlaid the new products coming out of research.

The heart of the program is the research board. All ideas for new products are first submitted to this board. The research board includes the president, executive vice president, treasurer, vice presidents of engineering, manufacturing and marketing, the head of the product planning activity, and the assistant vice president of manufacturing. Thus, all major operating divisions participate in decisions on new product development.

The market research and marketing divisions are consulted on features, appearance, and price before a line is made on drafting paper. Sales, engineering, manufacturing, and financing problems are covered before—not after—product development work is begun.

Once a project is approved, it is assigned to the proper operating division. But the research board continues to keep track of its progress.

II. Greater Flexibility

Bell & Howell has found that short-range flexibility is actually enhanced by long-range planning. Forecasting the current year's profit-and-loss is both easier and more accurate. The marketing division prepares a detailed sales forecast by products, models, and months, and submits it in an evening session to manufacturing, financial, and administrative management. Inventory levels are set, manufacturing schedules drawn up. Cost of sales and divisional expense levels are established by the budget board, in consultation with division managers. This procedure is repeated frequently through the year.

The forecast profit-and-loss statement, together with an anticipated balance sheet position projected one year ahead, is submitted to the board of directors at its December meeting.

A key factor in flexibility is the sales analysis review board, which meets monthly. Membership includes top marketing, manufacturing, purchasing, and market research people, as well as the executive vice president. Product projections are studied month by month for the following 15-month period. Then sales histories—product by product—are compared with the projected manufacturing and inventory schedules. Sales, manufacturing, and inventory programs are reviewed and confirmed, or modified in the light of changed conditions.

Supplementing the sales analysis board, a smaller group meets each Monday and briefly reviews sales and manufacturing progress toward budget goals.

III. Budget Control

The highly important budget board controls the purse strings of the company. Serving on it are the president, executive vice president, treasurer, controller, and vice president of manufacturing. It assists in the development of all budgets—in cooperation with the division managers—and recommends them for approval. Its responsibilities are the annual divisional expense budgets, manufacturing schedules, capital equipment budgets, inventory objectives, and the cash-flow forecast. It must operate within the current earnings target.

Too new to fully evaluate is the audit committee, which holds divisional reviews every three to six months. Its purpose: communications and evaluation. The members—the president, executive vice president, staff vice presidents of manufacturing, sales and engineering, the treasurer, and the controller—review with each division manager the progress toward goals and the problems of his division. The need to prepare for a review should give the manager a better perspective. ●

Electronics: New Cup of Tea for Britain

PANTIYA TEA & RUBBER LTD. has changed its name to Pantiya Electronics.

The change seems an extreme example of corporate diversification. Yet it represents the kind of decisions management men will be making more often under the stimulus of advancing technology.

The electronics industry has been the favorite of diversification-minded managers and investors—in the U. S. A., and more recently in the United Kingdom. Pantiya's case is symbolic of what is happening in the burgeoning British electronics industry.

Pantiya decided the future of its Ceylonese plantations was not bright. Looking around for more profitable lines, management decided that the electronics industry would brew a nice cup of business tea—so it bought some small firms that were long on ideas, but short on capital.

Or take the case of Gas Purification & Chemical Co. It was founded in 1873 to serve the gas industry, later entered the machine tool business. Today, it operates solely as a holding company, with 17 subsidiaries producing a variety of electronic equipment.

There are now some 1,850 firms in Britain's electronics industry, and new firms are still springing up by the dozens. Around 700 of the operating concerns are very small—less than 50 employees each. About 200 of them produce only one or two items of highly specialized equipment.

But as fast as the small specialized firms have sprung up, former specialist companies have moved into wider fields. In 1950, the Solartron Group was selling instruments at the equivalent rate of $4,500 a month. Now, with an interest in computers, industrial electronics and cybernetics, sales are up to $300,000 a month.

R. B. Pullin Ltd. was once just a meter manufacturer. Today it has six subsidiaries specializing in optics, meters, and electromedical equipment. A new factory is turning out gyroscopic components under a licensing agreement with a U. S. firm.

And as the small firms have

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grown larger, the large companies have grown still larger. Elliot-Automation takes first place in the expansion race—it is currently the only company in Britain providing every type of control and industrial equipment.

Associated Electrical Industries has upgraded its electronic activities to the same level as its heavy engineering. Its subsidiaries (British Thomson-Houston and Metropolitan-Vickers) are putting more emphasis on computers, machine tool control, and industrial control equipment

English Electric Co. Ltd. is striving to commercialize its computer and guided weapons knowledge. Electrical & Musical Industries is increasing its work on computers, machine tool control, and tape controlled conveyor systems. Mullard-Philips is doing advanced work on solid state switching controls.

The big firms are also taking over the manufacture of atomic-energy instruments—a field they once left to the small specialized firms.

As competition increases, the young hopeful companies find it more difficult to survive. Few can afford the cost of research to expand into wider fields. Of the 700 small companies, perhaps a third will continue to thrive with narrow, specialized output. Others will become subsidiaries of the giants. But a great many will also disappear—unless they can find a rich sponsor like Pantiya Tea & Rubber. (*Control Engineering, May, p*43) ●

In Management

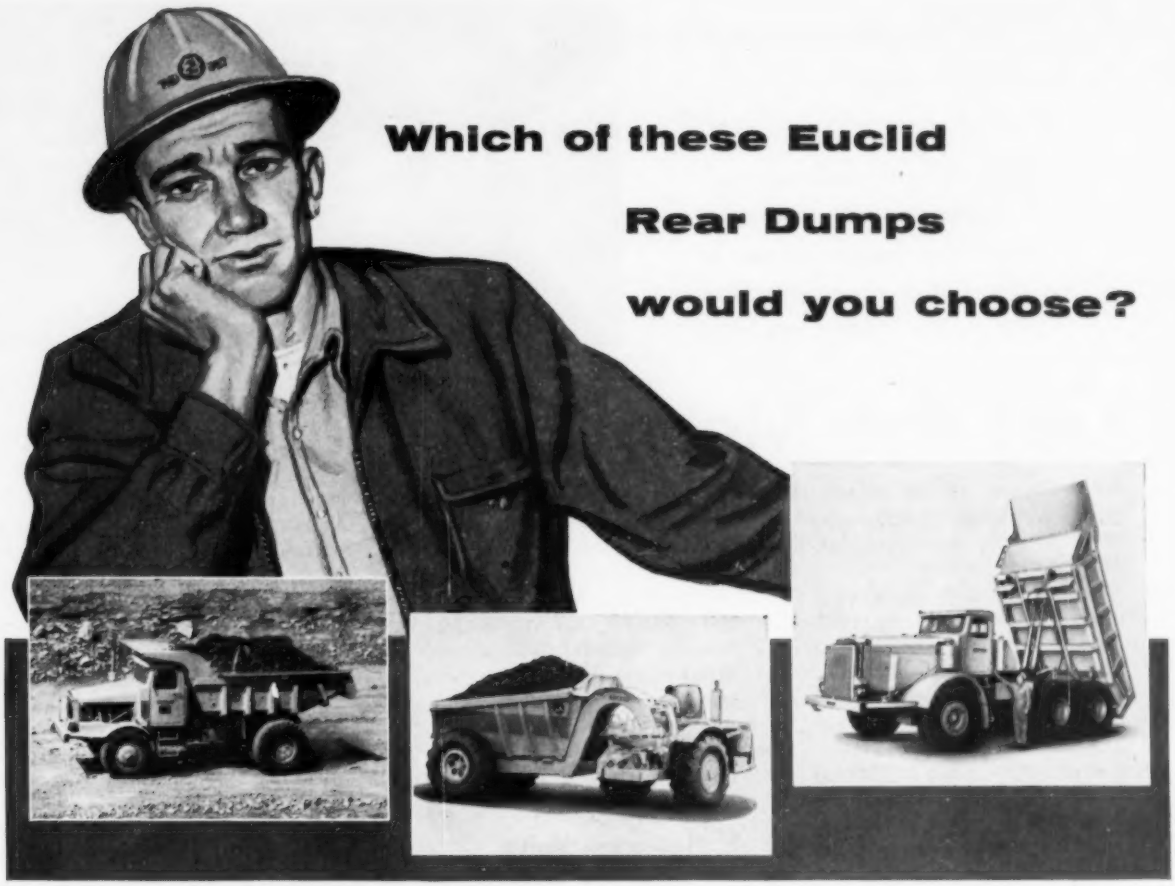
● **TOURS of industrial France** are convincing thousands of businessmen, engineers, and students that there is a vital and growing economy despite the confusion of French politics. Organized tours for foreign visitors have been going on for eight years, under the sponsorship of the Conseil National du Patronat Francais in cooperation with government agencies. Dams and power plants, factories, housing projects, wine-making and mining enterprises, have been visited by some 50,000 foreigners.

French firms at first were reluctant to participate in the program, figuring that each visit cost about $2.50 per hour in guides, brochures, lunches and lost time. But they soon discovered that the tours were cheap as advertising and public relations. Today the Patronat gets hundreds of applications from firms wanting visitors. It selects only those who have something internationally advanced to show. (*France Actuelle, May* 15, *p*8)

● **PURCHASING MANAGEMENT becomes more important worldwide.** May brought the first meeting of the European Congress of Purchasing Agents in Brussels, where 200 PA's met to discuss common problems. Biggest problem: Would the Common Market and Free Trade Area, with its opportunities for vastly improved buying in Britain and the Continent, go through? . . . Meanwhile, 100 British purchasing executives went to Oxford University for five days to attend an advanced course in purchasing. It brought this comment from one "student," who argued that there are disadvantages connected with the increased importance of purchasing: "If at some point you are lucky enough to buy at the lowest point in the market, that purchase will haunt you forevermore. Management expects you to keep doing it!" (*Purchasing Week, May* 26, *pp* 1, 26)

● **STUDENT PARTICIPATION in management** got a realistic trial in a California (U.S.A.) department store recently. Management and students were drawn together by their individual problems: Students felt they were not getting enough practical experience in business; company executives felt they were not getting enough business from the college.

Out of this situation grew a workshop project. For six months, the students delved into every phase of the company's store and office operation; then a hundred-odd students stepped into the company's executive jobs for three days. The students got practical experience; the store added business, and got some valuable advice on clothing styles, public relations.



Suppose you were a road contractor... a mine operator... or a quarry owner...

And suppose, further, that you needed hauling equipment to move a half million tons or so of heavy excavation at the lowest cost. What type would you select—single or tandem drive axle, or semi-trailer? What capacity, from 10 to 50 tons payload?

When you have a decision like that to make, you don't just take your choice or ride a hunch. Not if you want to make money and keep your costs low as possible, you don't. You study the job—size and type of loading unit, grades, length of haul, production required, method of dumping and other factors before you even begin to consider your equipment requirements.

One of the reasons why Euclid Rear-Dumps have been the outstanding choice for years on off-highway hauling is the complete range of capacities and power that fits any job. There's no need to compromise on equipment that's too small or too big, under-powered or over-powered, or simply just the wrong tool for the job. Euclid dealers render important service, too, by providing technical assistance to users of heavy earthmoving equipment. They compile production and cost estimates that help you determine the proper model application—maintain parts and service facilities that keep "Eucs" working at peak efficiency.

Engineered to fit the job . . . Euclids are your best investment.

GENERAL MOTORS OVERSEAS OPERATIONS • 1775 Broadway, New York 19, N. Y, U. S. A.
EUCLID (GREAT BRITAIN) LIMITED • Newhouse, Lanarkshire, Scotland

EUCLID PRODUCTS

Trade fairs reverse the traditional buyer-seller relationship—the buyers come to you. But it takes practice, patience and planning to...

Get the Most from Trade Fairs

THE VISITOR at the recent Hanover fair knew exactly what he wanted: an automatic machine that would turn out precision cameras. Exhibitors patiently explained that despite the much-publicized progress in automation, camera-making still required many specialized machines and even more specialized skills.

Another visitor—from the Congo—knew what he wanted too: a machine to make "dying pigs." After considerable language difficulty, it was discovered the man had been importing toy balloons made in the shape of a pig (which produced a "dying pig squeal" when the air was released) and he wanted to mold them himself. His mission ended in success.

Humorous examples perhaps, but they illustrate the growing importance of international fairs in marketing. The men traveled a long way to wander around the exhibits at the German Industries Fair, and both were interested in buying, whether they found what they were looking for or not. An exhibitor will travel just as far to open up new markets—be he a Swiss tool-maker at the recent Osaka fair or the Italian designer of the automatic ravioli machine at the May international trade fair in New York.

Trade fairs are not new, of course. There are ones in Europe with a tradition reaching back 500 years or more. But every year, it seems, a new exhibition is organized somewhere. And specialized one-industry shows pop up everywhere, in hotel suites or in giant new exhibit halls.

The manufacturer who wants to exhibit his products will soon find out that there is more to it than taking orders. He will soon learn the problems and frustrations of the exhibitor: the increasing number of national propaganda pavilions; too many sight-seers and too few buyers; customs nightmares; fairs with conflicting dates; booth assignments and traffic patterns; exhibit design; and many others.

I. Measuring Value

Perhaps the first question he will want an answer to is, "How can you measure the value of exhibiting at a trade fair?" The bare cost of mounting and manning an exhibit can be estimated fairly closely after an exhibit has been planned.

But it is more difficult to measure effectiveness. "Serious inquiries" is the most widely used measure.

Comparative figures for types of fairs have been compiled by the British Board of Trade's Exhibition Advisory Committee. The Board is charged with spending an annual budget of £160,000 to assist British industry in participating in overseas trade fairs—allocations go equally for "national-pavilion," general, and specialized fairs.

At specialized one-industry fairs, the Committee books space for British exhibitors and erects the shells for displays; then each participating firm mounts and staffs its own exhibit. For general fairs, the Committee mounts special displays of British goods, with prestige as well as sales in mind.

Committee figures show that general trade fairs—such as Paris, Hanover, or Milan—have an average cost of between £30 and £400 for each serious trade inquiry. Specialized one-industry fairs, on the other hand, produce a much better return. At one scientific instruments fair last year, for instance, the Committee's investment resulted in a serious inquiry for every £2 spent.

The Board of Trade's advisory group is duplicated in a number of countries, and these committees strongly influence the decisions of manufacturers to exhibit abroad. In France, for example, the Permanent Committee of Foreign Fairs makes or breaks French participation— by giving rebates on transport and space charges, subsidizing collective exhibits, and supplying technicians to attend to custom formalities and installation at the fair.

One promoter of trade shows suggests that a company measure trade-show value in these terms:

"In a well-organized exhibition, you can count on making something like 40 or 50 contacts a day—about 10 times more productive contacts per day than a salesman can make in the field. If you know the average cost of your salesman's call, then you can compare what it costs 'per call' to participate in an exhibition."

But more important than such cost figures, according to this trade fair promoter, is that the buyer comes to you—and in a receptive frame of mind. In other words, you reverse the traditional

PRODUCED IN FORTIFLEX

...for 15 good reasons

- Heat resistance—to 250° F! Can be sterilized
- Low temperature strength—excellent at –40° C!
- Rigidity—five times stiffer than conventional polyethylene!
- High density linear structure
- Excellent new surface gloss
- Wide range of colors
- Acid resistance
- Impact strength—one of the *toughest* plastics
- Alkali resistance
- Chemical resistance
- Low permeability
- Thin wall strength
- Light weight
- Moldability
- Most important—the *combination* of all these properties in *one* material!

This is truly a remarkable new thermoplastic, that does all the things that polyethylene does, and many far better. It opens up thousands of *new* opportunities for product applications, from chemical carboys to tough, unbreakable toys . . . from electrical insulation to rigid, lightweight pipe . . . from housewares to appliance and equipment components of all kinds . . . from drug and cosmetics bottles to sterilizable baby bottles. Fortiflex is accepted by the U. S. Food and Drug Administration.

Whatever your product line, it will pay you to investigate Fortiflex, for there is scarcely an industry that this great new plastic won't benefit. Ask your Amcel representative for technical bulletins to help you apply Fortiflex to your business—to your profit.

Celanese® Fortiflex®

See your representative listed below for: Plastics, Polyester Resins, Chemicals, Textiles, Cellulose Acetate.

Australia, Sydney, N.S.W. (& Brisbane, Queensland). James Hardie Trading Co. (Pty.) Ltd..Plastics & resins.
Australia, Melbourne...Hardie Trading Co. Ltd..... Plastics & resins.
Austria, Vienna XIX....Eugen Farber.....Chemicals, plastics, resins, C. A. & textile products.
Belgium, Brussels.....Keyser & MacKay.....Resins.
Belgium, Gand.....Cocentra S.P.R.L.....Chemicals, plastics & C. A.
Ceylon, Colombo...Mansram (Ceylon) Ltd...Fabrics.
Denmark, Copenhagen.....Johan Foge Jensen... Chemicals.
Denmark, Copenhagen...A/S Industriprodukter... Plastics & resins.
Denmark, Copenhagen.....Otto Sandgreen..... Textile products.
Egypt, Cairo.....Padova & Co.....Textile products.
England, London.....A. Revai & Co. (Chemicals) Ltd. ...Chemicals.
England, Coventry.....Coutaulds Ltd.....Plastics.
France, Paris.....Pautrot & Bonnet.....Chemicals.
France, Paris.....Loirot & Haentjons.....Plastics & textile products.
Greece, Athens....N. G. Zoullas & Co.....Chemicals, plastics & textile products.
Hawaii, Honolulu....Theo. H. Davies & Co. Ltd..... Chemicals, plastics & textile products.
Holland, Amsterdam...N. V. Consolco....Chemicals.
Holland, Den Haag....Handelsmaatschappij Vos & Co. N. V....Plastics & resins.
Holland, Rotterdam.....Internatio.....C. A. & textile products.
Hong Kong...Optorg Co. (Malaya) Ltd.....Chemicals, plastics, resins & textile products.
India, Bombay..Banwari Lal & Co., Ltd...Chemicals, plastics, resins, C. A. & textile products.
Israel, Tel-Aviv...Manfred Gottesmann...Chemicals, plastics, resins & textile products.
Italy, Milano....Usvico (Societa Industriale Commerciale)...Chemicals, plastics & textile products.
Japan, Tokyo.....Percy Breen.....Plastics.
Korea, Seoul.....Bando Trading Co., Ltd.....Plastics & resins.
Korea, Seoul....Sung Prum Leo....Textile products.
Lebanon, Beirut....A. Sahmarani Freres.....Textile products.
Morocco, Casablanca..I. J. Alazraki..Textile products.
New Zealand, Auckland....Hardie Trading Co. (N.Z.) Ltd....Plastics & resins.
Norway, Oslo.....Christen Hoeg.....Chemicals, plastics & resins.
Norway, Oslo.....S. E. Solberg.....Textile products.
Pakistan, Karachi.....Syed A. & M. Wasir Ali..... Chemicals, plastics, resins & textile products.
Philippines, Manila.....Union Trade Distributors.... Chemicals, plastics & resins.
Philippines, Manila.....F. E. Zuellig Co., Inc..... Textile products.
Rhodesia, Bulawayo.....John Beith (Rhodesia) Pvt. Ltd....Chemicals.
So. Africa, Durban (Portuguese East Africa, Nyasaland) ...John Beith (S. A.) Pty. Ltd....Chemicals.
So. Africa, Johannesburg....J. J. Allman Sales Corp. Plastics & resins.
So. Africa, Johannesburg (Durban & Capetown)..... E. I. Rogoff Ltd....Fabrics.
So. Africa, Johannesburg (Durban & Capetown)..... Internatio-Rotterdam (So. Africa) (Pty.) Ltd.... Textile products.
Spain, Barcelona....Extractos Curtientes y Productos Quimicos, S. A....Chemicals, plastics & resins.
Sweden, Alvenas Valberg.....Svenska Rayon Aktiebolaget...Textile products.
Sweden, Stockholm....A. B. Metall & Bergprodukter ...Chemicals.
Sweden, Stockholm.....Scandinavian Raw Materials ...Plastics.
Switzerland, Basel.....Chemische Fabrik Schweizerhall A. G....Chemicals, plastics, resins & C. A.
Switzerland, Zurich.....Walter Aebli & Co..... Textile products.
Syria, Damascus.....Sahmarani Hammour & Cie..... Textile products.
Taiwan (Formosa), Taipei.....Dah Chung Trading Co. ...Chemicals, plastics, resins & textile products.
West Germany, Hamburg..Karl O. Helm...Chemicals.
West Germany, Hamburg.....Plastica Renning K. G. ...Plastics.

AMCEL CO., INC., 180 MADISON AVENUE, NEW YORK 16, N. Y.
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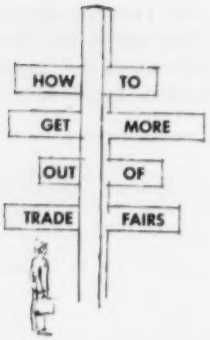


buyer and seller relationship.

Costs are greatly increased by hospitality suites in hotels and expense-account entertaining. Many companies consider these extra expenses essential.

But one small U.S. company proved it could exhibit at five trade shows for no more than it had been spending on its one annual "trade-show fling." It set a strict budget of $2,500 for each show, and cut out all entertaining, reduced the size of its exhibit and limited the display to new products. Usually two men attend the booth, helped by a locally-hired girl who registers visitors and fills out inquiries on a special form. With this strict attention to business, cost per inquiry has been half the cost of inquiries from trade paper advertising.

Small companies participate in fewer shows a year, but they often make a greater effort to measure effectiveness than do large companies participating in 75 or more shows a year. Small companies, too, make a much better attempt to follow up sales inquiries.

II. Planning the Display

Many companies participate in trade shows strictly for the public relations potential, and make little or no effort to sell. Some are content just to operate message bureaus. But for those seriously interested in improving their exhibits, there are some workable guide posts.

American studies, using interviewing techniques, have turned up some of the factors that determine the "functional impact" of an industrial exhibit. The "best-remembered" exhibits, according to these studies, feature a continuous telling of the product story, with emphasis on applications—product display is not enough. Attention-getting devices should be functional and not just something "unusual." These studies also commented on the use of pretty girls to help get across a sales message: "The prettier the girl, the less impact for the sales message."

Some products do not readily lend themselves to demonstration. For these, display experts suggest motion pictures, closed-circuit television, small functional models —any kind of ingenious device that will help to explain how the product is used.

As every visitor to a trade show knows, a lot of thought goes into the design of an exhibit. In fact, exhibit design has become almost a recognized subdivision of architecture. The Europeans in particular are strong on what is sometimes called the "cubic content"—as opposed to the idea of an exhibit as so many square meters of floor space.

This school of design is fostering two-story exhibit "booths," fancy overhead designs and special lighting effects, and towers reaching six or nine meters into the air (and costing up to $30,000).

In most cases, elaborate designs are tailored to a particular exhibit hall. But there is also exciting work being done on traveling "knock-down" designs.

III. Customs Are Customary

Of course you have to get your exhibit material into the country. A good deal of patience is required.

Take West Germany, for example. An unframed photograph is admitted duty-free as advertising material; but framed pictures are subject to duty or re-exportation. Another West German quirk is that most exhibit construction material is duty-free—with the exception of paint. Almost all countries, incidentally, exempt construction and decorative materials, subject to re-exportation or destruction.

Britain grants exemption to "small" amounts of advertising material, but not enough to meet the needs of a trade show. And decorative materials must be re-exported within 15 days after the fair (custom duties go into force then).

Some countries allow import-quota exemptions for trial samples to be given away (Austria, for instance, allows up to 25 kg. for foodstuffs with an import license, 25 liters of liquors, 500 cigars or cigarettes). Most countries, however, allow no exemption for free samples.

For exhibitors, a touchy point is whether they can sell products on display to recover their outlay, or to dispose of bulky or perishable products. If the sales come out of the normal import quota, there is seldom any problem.

Many countries allow special quotas for specific fairs. Some announce general quotas, others break the quota down by commodity (The Netherlands, for instance, claims that general quotas allow exhibitors the opportunity to evade import regulations). Poland grants special quotas if the product is important to the Polish economy. Italy considers each application on its own merits. Britain, on the other hand, strictly applies its standard import licensing system.

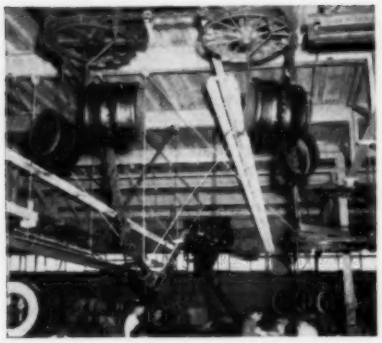
Because of the profusion of special regulations, it is a good idea to separate products and exhibit material in shipment.

IV. Helping the Exhibitor

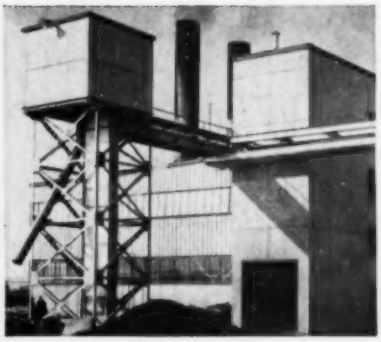
The complaints of exhibitors have found one champion that is not only listening, but is trying to do something about them. The International Chamber of Commerce, working in liaison with the Union des Foires Internationales and other groups, has issued a variety of recommendations aimed at making life easier for exhibitors. There seems to be a strong feeling among exhibitors that there are too many non-commercial fairs, that fair management can be improved, and customs regulations eased.

Fairs can exist only through the participation of exhibitors, however, and exhibitors are in the best position to get action. The ICC favors this in preference to intergovermental regulation.

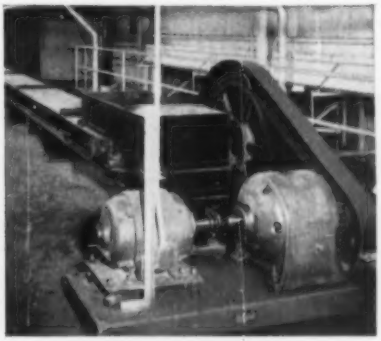
The ICC has noted with approval that a number of trade groups—notably in the textile, machine-tool, and motor industries— have been collecting and distributing information on the value of vari-



"GREEN TIRES" travel from building machines to inspection stations on Link-Belt trolley conveyor. Conveyor operates at 30 fpm—dips at work area so hooks can engage tires.



COAL for three boilers, each 25,000-lbs. per hour capacity, is handled from track hopper to storage or to conveyor leading into powerhouse by Link-Belt centrifugal discharge bucket elevator.



LINK-BELT DRAG CHAIN CONVEYOR with Link-Belt helical gear speed reducer transfers coal from bucket elevator to bunkers in powerhouse. Bunkers have Link-Belt cast iron duplex gates.

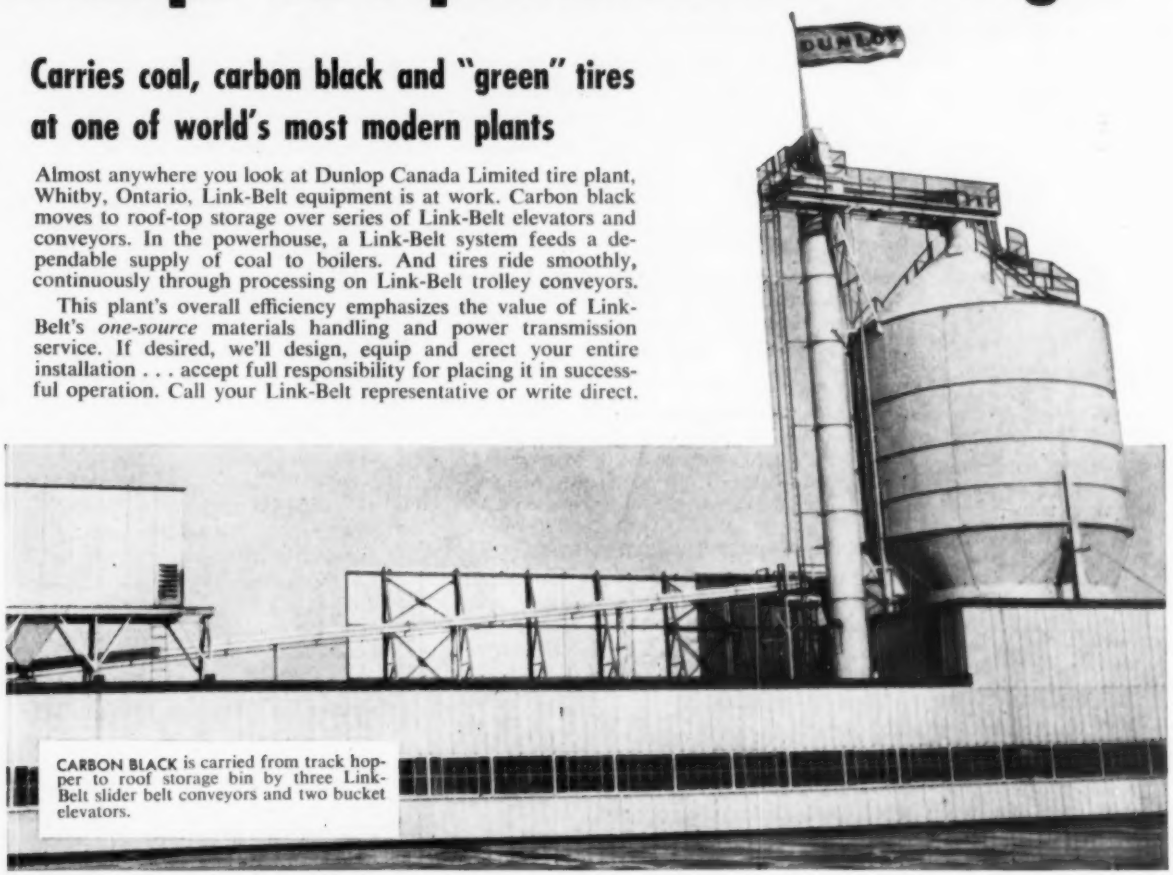
How LINK-BELT equipment—conveyors, elevators, drives—

keeps tire production rolling

Carries coal, carbon black and "green" tires at one of world's most modern plants

Almost anywhere you look at Dunlop Canada Limited tire plant, Whitby, Ontario, Link-Belt equipment is at work. Carbon black moves to roof-top storage over series of Link-Belt elevators and conveyors. In the powerhouse, a Link-Belt system feeds a dependable supply of coal to boilers. And tires ride smoothly, continuously through processing on Link-Belt trolley conveyors.

This plant's overall efficiency emphasizes the value of Link-Belt's *one-source* materials handling and power transmission service. If desired, we'll design, equip and erect your entire installation . . . accept full responsibility for placing it in successful operation. Call your Link-Belt representative or write direct.



CARBON BLACK is carried from track hopper to roof storage bin by three Link-Belt slider belt conveyors and two bucket elevators.

LINK-BELT

CONVEYORS AND DRIVES

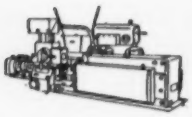
LINK-BELT COMPANY: Engineers • Manufacturers • Exporters of Machinery for Handling Materials and Transmitting Power • Established 1875. **EXPORT DIVISION:** 233 Broadway, New York 7, U.S.A., Cable Address: Linkbelt—New York • Australia, Marrickville (Sydney) • Brazil, Sao Paulo • Canada, Scarboro (Toronto) • South Africa, Springs • Representatives Throughout the World. 14,595

Where Performance Counts

WALLACE & TIERNAN EQUIPMENT IS USED

CHLORINATION

The W&T high capacity chlorinator shown above at a steam generating plant is used for chlorination of cooling water to eliminate slime formation on condenser water-side surfaces. The W&T chlorinator was chosen because of its accuracy, dependability, and simplicity of operation. These qualities are typical of Wallace & Tiernan's complete line of chlorination equipment which is widely used both in industry and in the protection of public water supplies.



PROCESS FLOW CONTROL

Equipment includes chemical solution feeders, gravimetric and volumetric dry feeders, and gravimetric meters for use in the chemical, grain, and food processing industries.

AIDS TO NAVIGATION

Includes a number of protective devices for navigation such as buoys, lamp changers, flasher mechanisms, signal timers, fog horns, aircraft flasher units and other related apparatus designed for use in the marine and air transportation field.

PRESSURE SENSITIVE INSTRUMENTS

Equipment includes a complete line of aneroid and mercurial pressure sensitive instruments, such as altimeters, barometers, and manometers designed for use in industrial testing as well as for research purposes.

Other quality Wallace & Tiernan products and services used throughout the world are listed below. For further information send for list number F-106 of available free technical publications on all Wallace & Tiernan products.

Ammonia Control Apparatus — Cathodic Protection Systems — Chemical Feeders — Chlorinators — Decay Control Process for Produce — Electric Marine Beacons — Flour Processing Chemicals — Pharmaceuticals — Precision Instruments

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REPRESENTED IN MOST COUNTRIES

F-106

ous fairs. The ICC may set up a Commission of Exhibitors to act as a central information bureau.

There is a feeling among exhibitors that one general fair a year is enough for each country (except for extra large ones); and that many of the international fairs should be partially specialized. The consensus is that annual fairs should start on the same date, picked carefully to avoid conflicts with other fairs, and run preferably for one week. And all exhibit halls should be "bonded warehouses" for customs purposes—as some are already.

The ICC study group also favors group action against the system of national pavilions used by many fairs. The chief complaint is that the national pavilion system compromises the commercial nature of shows, and turns them into propaganda affairs. (But note that there is no opposition to national information and tourist booths.)

One drawback to eliminating national pavilions is that the Communist countries are strong on using pavilions in Western countries, and Western nations are strong on the idea in Communist countries. And both sides in the Cold War combine to encourage the idea in Asia and Africa.

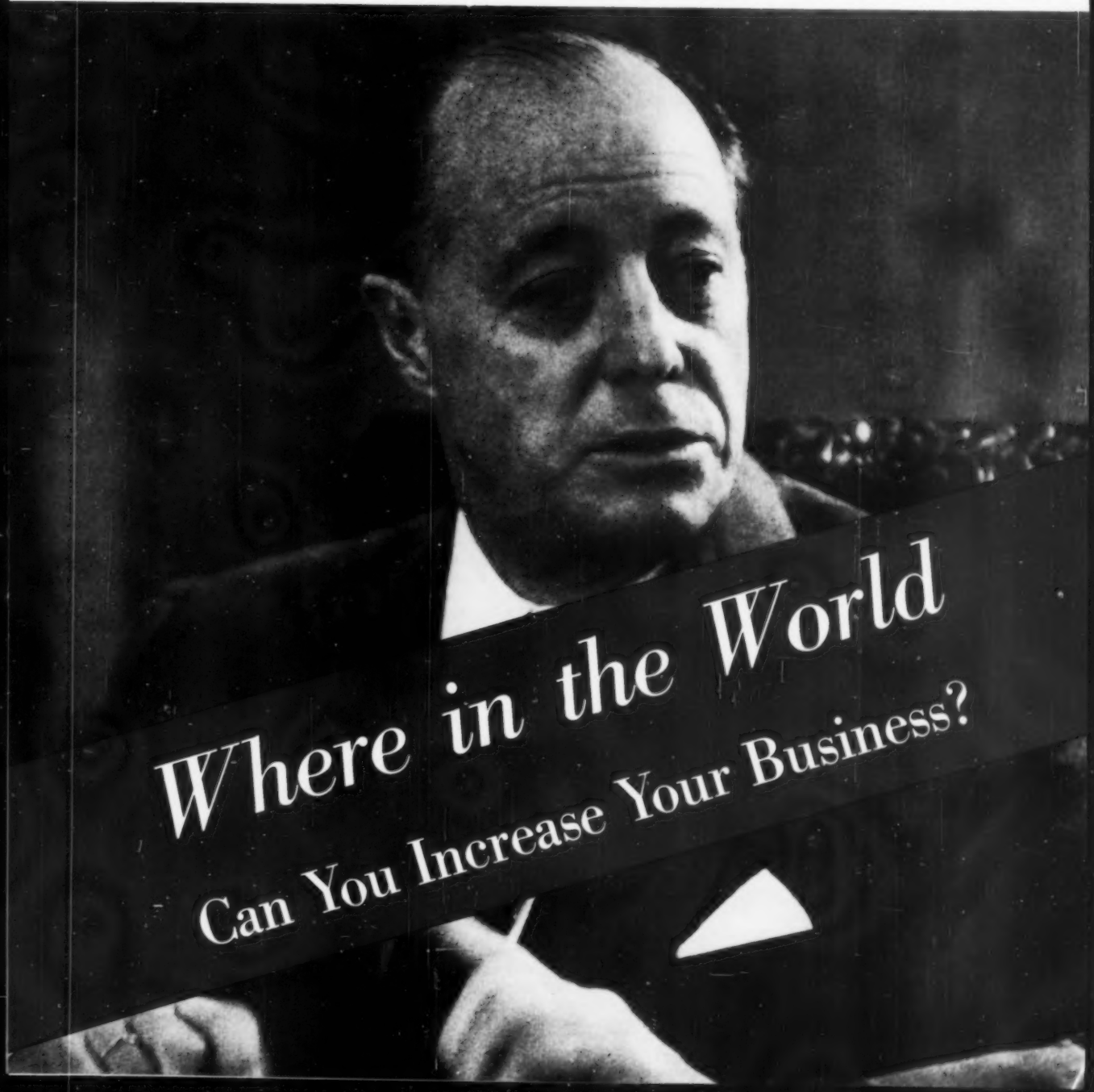
But fairs are becoming more sensitive to the needs of exhibitors. Italy, for instance, is showing how to attract more foreign visitors to the Milan samples fair—through free visas, reductions on Italian railroads, and the services of guide-interpreters.

And new fairs are showing an admirable awareness of the exhibitor's needs. Chicago has announced the world's newest international trade fair for July of 1959. The fair management will provide a free market-counseling service to evaluate foreign products in terms of pricing, design, competition, and distribution. Another service will be a specific exhibit area reserved for the negotiation of licensing agreements. A world marketing conference will be held in conjunction with the fair. And not least, the fair management will help arrange to have exhibits at the New York world trade fair—scheduled for May—shipped to Chicago and stored until July. ●

International Management Digest

ONE DOLLAR (U.S.)

THE McGRAW-HILL PUBLICATION OF WORLD BUSINESS INFORMATION



Where in the World Can You Increase Your Business?

In the World's Leading Business

. . . reached through

International Management Digest

Do they know about you in Caracas? In Bombay? Stockholm, Tokyo and Sydney? In the other leading markets of the free world? They ought to. And for only 3¢ a call you can tell them about your product or service — tell the men who count: Management men.

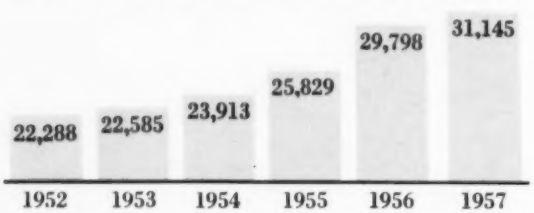
A truly world-wide audience

You name it. Wherever there's a need for your product or service, chances are that the man in a position to buy reads *International Management Digest.* It's the one magazine designed, edited, and published expressly to serve management men overseas. They like what it gives them. *International Management's* phenomenal circulation growth attests to that.

39.7% Circulation Increase in the Past 5 Years

Reader acceptance has made *International Management* the outstanding management magazine in the international field. All over the world more and more readers are turning to this magazine's pages for guidance in purchasing products and services, to get the news they need and to keep them up-to-date on world business — to get information that will help them do their jobs in a way that brings higher profits, more productivity.

Growth in Net Paid Circulation (ABC Figures)



Read by Men Who Buy

In a recent survey, 82% of *International Management's* readers said they use the magazine for guidance in purchasing products, as well as banking, transport and other services. These readers look in *International Management's* pages for ways to help them run their businesses more effectively, efficiently, profitably. They need to know, because they are the important business executives who decide what to buy, where to buy.

A careful industry and title "search" was made last month through a batch of new subscriber cards received in the publisher's office. 1,357 cards in all. They came from all over the free world. The breakdown shows again the quality of *International Management's* readership:

Out of this one batch of subscribers, 425 of them were managers (including department heads, export managers and general managers); 240 were directors; 151 owners; 148 technical managers; 35 presidents. The rest were trade association officials and purchasing managers, or company subscriptions.

Here's how the percentages of this batch of subscriptions look by job:

Directors, presidents, owners	54%
Department & division heads	33%
Engineers — technicians	11%
Educational — miscellaneous	2%

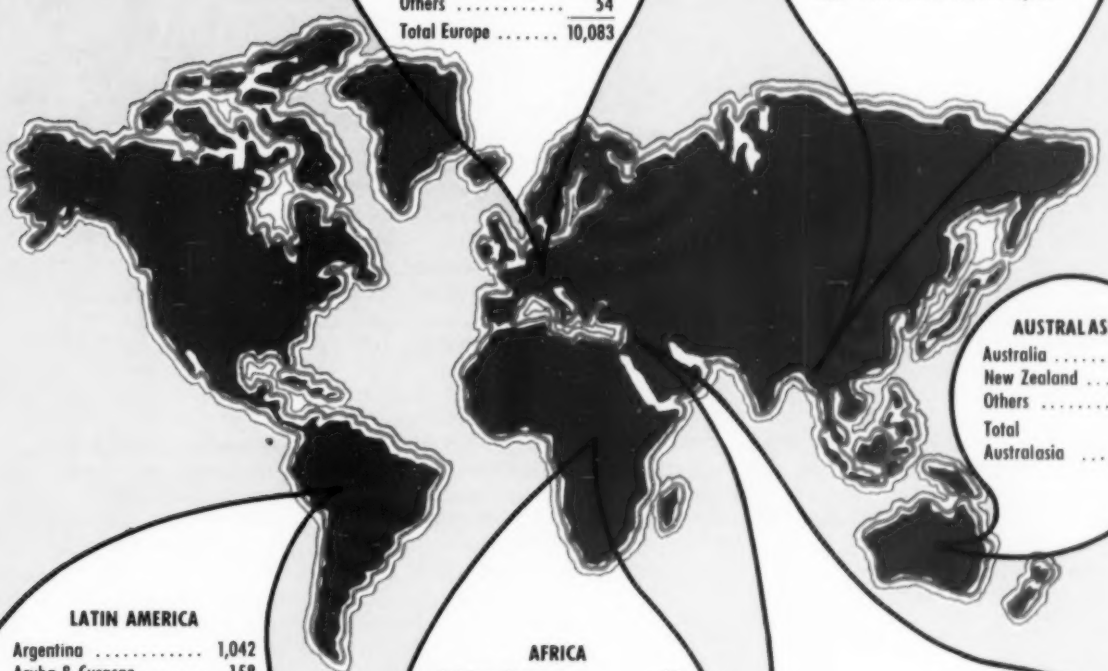
Readers in Every Field of Commerce

The check of this group of subscribers confirmed what a recent survey of *International Management's* readers revealed: Subscribers are in all phases of world business. The classifications look like this:

Manufacturing & processing
Trade & distribution
Raw material production
Transportation, communication & utilities
Business, industrial & personal service
Construction & installation
Finance, insurance & real estate
Government & education

By selecting the best from hundreds of outstanding magazines, newspapers and McGraw-Hill news reports in every field of world business, *International Management* is able to deliver to its readers a balanced, authoritative editorial content that is designed to build a readership unmatched in the field. *International Management* delivers such high readership because its whole editorial content appeals to the reader's job interest.

Markets



EUROPE

Austria	67
Belgium	627
Denmark	279
Eire	111
Finland	161
France	851
Germany	1,082
Greece	98
Iceland	76
Italy	1,008
Netherlands	529
Norway	601
Portugal	196
Spain	457
Sweden	738
Switzerland	394
United Kingdom	2,754
Others	54
Total Europe	10,083

ASIA

Formosa	110
Hong Kong	90
India	859
Indonesia	152
Japan	553
Pakistan	208
Phillipine Islands	850
Singapore-Malaya	48
Thailand	42
Others	47
Total Asia	2,959

AUSTRALASIA

Australia	1,343
New Zealand	305
Others	9
Total Australasia	1,657

LATIN AMERICA

Argentina	1,042
Aruba & Curacao	158
Bolivia	110
Brazil	4,445
Chile	1,351
Colombia	693
Costa Rica	92
Cuba	540
Dominican Republic	82
Ecuador	131
El Salvador	93
Guatemala	116
Guianas	50
Haiti	38
Honduras	37
Mexico	2,147
Nicaragua	54
Panama	83
Paraguay	28
Peru	588
Puerto Rico	438
Uruguay	106
Venezuela	893
West Indies Federation	200
Others	144
Total Latin America	13,672

AFRICA

Belgian Congo	94
British East & West Africa	194
Egypt	171
French North Africa	56
French West Africa	86
Liberia	41
The Rhodesias	67
Union of South Africa	737
Others	63
Total Africa	1,509

MIDDLE EAST

Iran	39
Iraq	27
Israel	283
Jordan	20
Lebanon & Syria	86
Saudi Arabia	60
Turkey	228
Total Middle East	743

Total, Latin America Edition	13,672
Total, Overseas Edition	16,951
Others:	
U. S. territories (except Puerto Rico) Canada & U.S.	606
Grand Total for both Editions	31,229

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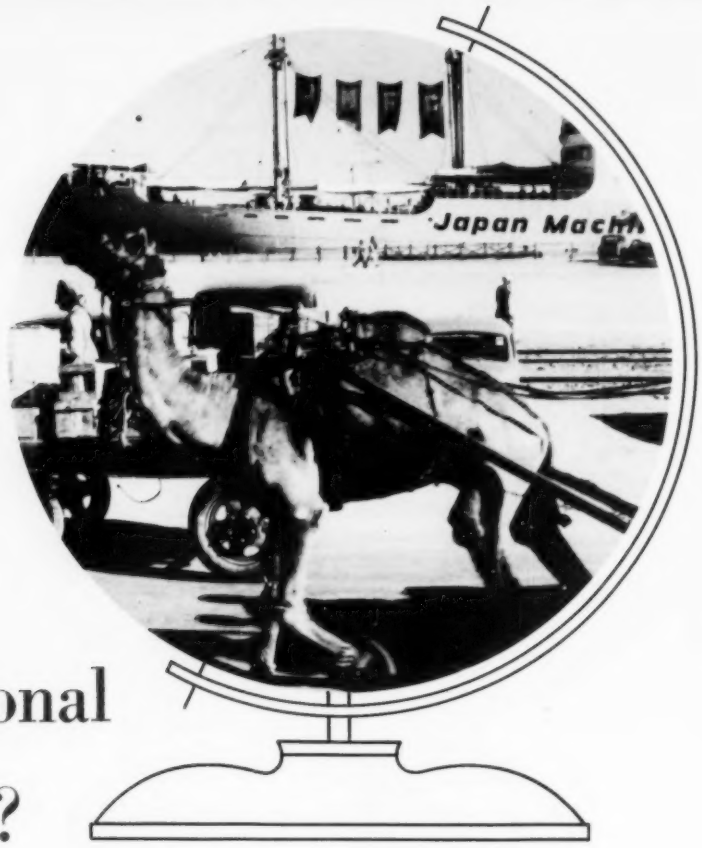

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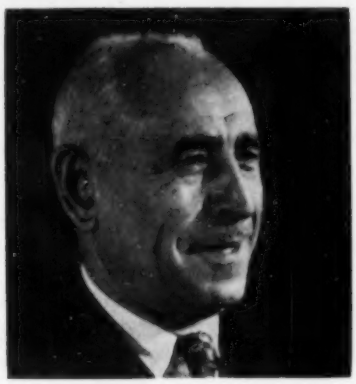

From a small and risky beginning, Arab banker Abdul Hameed Shoman (left) has built his Arab Bank Ltd. into an empire stretching from the Persian Gulf to North Africa.

Banker to the Arab World

Digested from BUSINESS WEEK, May 17, p114

THE ARABS never had a banking tradition until Abdul Hameed Shoman (picture) established the Arab Bank Ltd.

From one small office opened in Jerusalem 28 years ago, Shoman has built a banking empire with 36 branch offices in 10 Arab countries—three opened in the past few months—with total deposits of $125-million. And Abdul Hameed, though now 70 years old, still runs the show from his headquarters in Amman, Jordan.

The Arab Bank does an annual business of around $180-million in guarantees and credits for import-export trade. Its clients include not only leading Arab businessmen, but also the foreign businessmen that operate in the Middle East, such as the petroleum companies and airlines.

The Arab Bank's loans rose sharply last year—$71.2-million compared with $52.4-million in 1956. More than 18% of this loan volume went to the garment trade and spinning and weaving industry. Around 60% was lent for imports of foodstuffs, building materials, vehicles, and engines. Government and public enterprises got nearly 10%; and agriculture got more than 6%.

The Bank has helped to set up glass and cement works, textile mills, and a sugar refinery in Syria; a plywood factory and sugar refinery in Tripoli, Lebanon; and spinning and weaving plants in Alexandria, Egypt. It has financed local contractors who work for the government and oil companies in Saudi Arabia. And it is a participant in the Jordan Potash Co., a government-organized firm that plans to extract potassium fertilizers from the Dead Sea, and the Jordan Petroleum Refining Co., which will put up the country's first oil refinery.

The Arab Bank today is the most widespread, wholly-Arab bank in the region. It has a 1,250-man staff—many trained in Western Europe under a program started by Shoman.

By floating shares in all Arab states—a practice started in 1943—Shoman has made his bank pan-Arab rather than simply a Jordanian enterprise. In the past year, he increased the bank's capitalization from $6.6-million to $9-million by putting up 100,000 shares for sale at $45 per share. The new issue was sold in three weeks.

The main shareholders (375,000 shares outstanding) are the Shoman family, followed by businessmen in Lebanon and Kuwait. The Board of Directors includes such men as the Saudi Arabian finance minister and Emile Bustani, the well-known Beirut businessman.

Last year, the bank's net profit rose from around $1-million to $1.9-million — with $1.2-million paid as dividends in April.

The Arab Bank's rapid growth has come partly from the postwar boom in Middle East petroleum production. The new oil wealth in the region has increased the demand for imports and has boosted construction of roads, dams, buildings, and small factories.

Thirty years ago, European banks dominated the financial world in the Middle East. The Moslem religion forbids "usury," and the only Arab bankers were non-Moslem money-changers. Even now, banks in Saudi Arabia work on a commission-overdraft system. But elsewhere, the business community does not balk at the 7% to 12% interest rate charged by the Arab Bank.

Shoman, born near Jerusalem, went to the U.S.A. when he was 23 and spent 18 years as a merchant and importer. Realizing the role that banks played in economic progress, Shoman resolved to start one in Palestine. A tentative partner dropped out because of the threat of conflict between Arabs, Jews, and British in Palestine. Shoman decided to go it alone.

In 1930—with several cousins—he incorporated the Arab Bank in Jerusalem with $75,000 in capital. Only two of the 10 men on the staff had any banking experience. And to keep the bank running, Shoman returned to the U.S.A. for three years to earn money.

But looking to the future, he sent his son, Abdul Majeed, to

Variety of Cessna parts tied on Bunn Tying Machine range from 3 to 15 inches in diameter, 4 inches to 12 feet in length. Machine compensates automatically for varying sizes, shapes.

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study banking in a U. S. university and to work in the Chase National Bank (now Chase Manhattan). The son is now managing director of the Arab Bank.

The bank survived several panic withdrawals of funds—during the Italian-Abyssinian war and in World War II. With the Palestine war in 1948—and the independence of Israel—the bank closed its branches in Jaffa and Haifi and moved its headquarters from Jerusalem to Amman, Jordan.

The bank's handling of Palestinian refugee depositors who fled to Arab countries raised its prestige. All other banks refused to pay refugee depositors on the grounds that deposits had been frozen in Israel. But the Arab Bank, with its large cash reserves (50% ratio to deposits) paid out about $12-million out of a total $18-million deposited in its former Palestine branches.

As it turned out, the Palestine troubles stepped up a trend already established—creation of an "international" bank with offices throughout the Arab world. ●

Mutual Funds Are Force in U.S. Market

One of the biggest forces in the U.S. equity market is the investment trusts known as mutual funds. Net assets of 144 funds have grown from $1,300-million in 1945 to some $9,500-million now.

As opposed to a "closed-end" investment company—which operates like any fixed-equity corporation—the "open-end" funds must buy back their own shares on demand. The biggest fear of Wall Street analysts is that shareholders will panic in a falling market, forcing the funds to sell equities to pay them off—further depressing the market. But this has never happened.

The newest faith in mutual funds comes from two of Wall Street's oldest investment banking houses. Lehman Brothers offered three million shares ($12.50 each) in its new One William Street Fund, quickly had to issue 13-million more to meet initial demand. Close behind, Lazard Freres & Co. announced its own Lazard Fund Inc. ●

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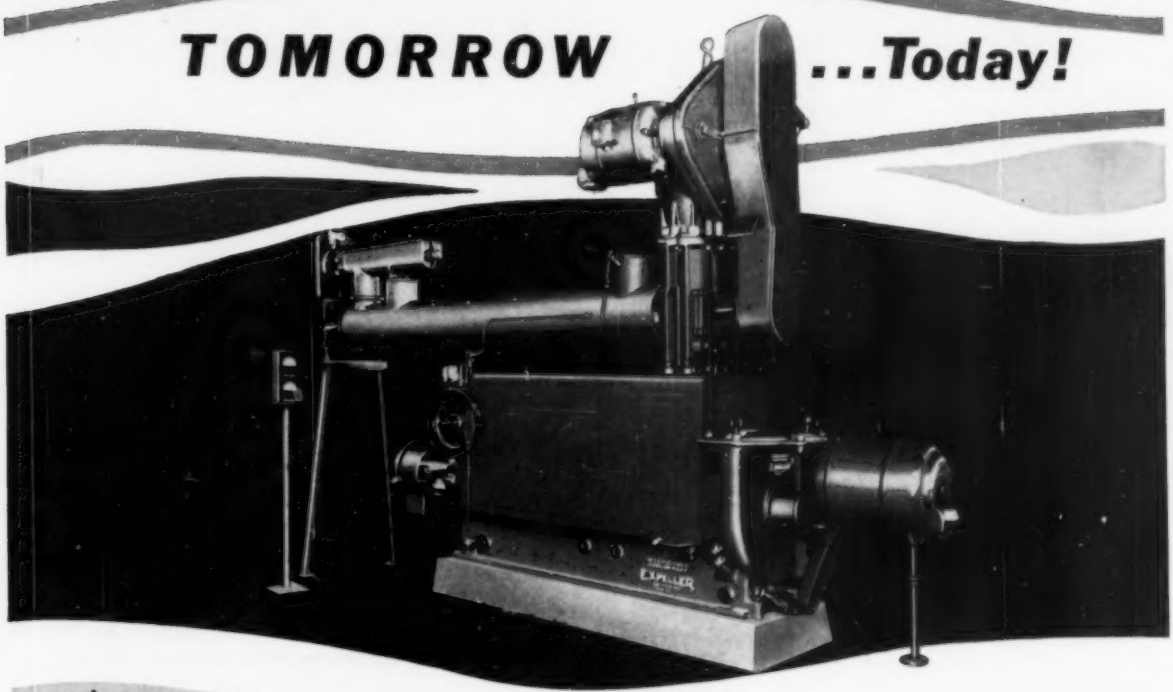

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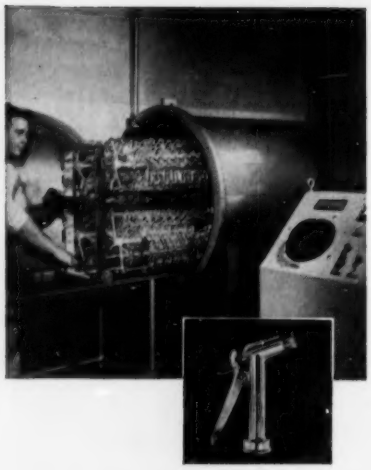

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This Stokes Vacuum Metallizer is installed in the plant of the world's largest maker of pistol-grip hose nozzles—Gilmour Manufacturing Co., Somerset, Pa. The Stokes unit is used to impart a low cost lasting metallic finish to Gilmour Hosemaster products.

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Financial Digest

For the third straight fiscal year, Asian countries have received the largest share of World Bank loans. The main reason: Development plans—railroads, dams, port facilities, power projects—have reached a stage where large scale financing is feasible.

Aid to private enterprise has also been substantial—a total of $299-million. Some of the loans were direct (with government guarantees), others were made through official relending agencies such as the Indian Industrial Credit & Investment Corp. and the Pakistan ICIC—set up to serve as a focus for capital formation and investment. These organizations underwrite new issues of equity securities, guarantee loans by other investors, resell their own investments, and help industry obtain managerial assistance.

Part of the equity capital for the agencies came from private sources—in the U. S., Britain, and Japan.

●

Reports from Germany say a new supply of equity capital for German investments abroad may soon be available. The Kreditanstalt fuer Wiederaufbau, a relending agency handling Marshall Plan loans to industry, has some 260-million Deutsche marks ($64.5-million) in repayments on loans made prior to 1951. The date is important, for no U. S. approval is needed on the use of these "counterpart funds" dating prior to 1951. The funds will probably be allocated for German industrial activities in the Middle East.

●

More than 60 foreign companies operating in Britain have protested the flat 10% profits tax proposed in the new budget (IMD, June, p36. Foreign companies have been subject only to a 3% tax on retained earnings, and not to the 27% rate on distributed earnings. Several foreign companies refused to join the protest, saying "How can you protest against equal treatment?"

●

Italy has received over 200 applications for profit convertibility since a guarantee to foreign investors was made law in 1956 . . . **U. S. businessmen are urging** their government to make a world-wide census of American investments abroad —similar to the pioneering survey of investments in Latin America (IMD, April '57, p13). . . . **A new bank is opening** for business in the new West Indies Federation. The Bank of London & Montreal is a combination of capital supplied by the Bank of Montreal ($10-million) and facilities supplied by the Bank of London & South America. At the same time, Canada announced plans to sponsor trade fairs in Jamaica and Trinidad. . . . **The Netherlands has restored** a 4% rebate on investment profits for four years—and industrial stocks rallied on the Amsterdam exchange. The government estimates that 11,000-million guilders in new equity capital will be needed in the next five years. . . . **Britain reduced its bank rate** from 6% to 5½% in keeping with the downward trend of world money rates, plus the strength of pound sterling (IMD, May, p1). . . . **U. S. market for foreign corporate shares** is getting another test with new $30-million American-South African Investment Trust Co. Ltd.

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Mule in the Jeep Family

A Jeep with a difference, the six-passenger Mule (left), has just been ordered by the U. S. military. While the manufacturer has no plans as yet for commercial or export sale, the new design may have a strong influence on the automotive industry.

The Mule, which bears little resemblance to the famous Willys Jeep, is a "platform-type" vehicle with seats that quickly fold flush to leave a clear deck for cargo or weapons. But its chief distinction is a 4-cylinder air-cooled engine made of aluminum like the Volkswagen engine, but unlike it in that it is designed for production by die-casting at the rate of one per minute or less. The new engine was developed by Willys "because there was no similar engine we could find," and has already set automobile makers talking of tooling up for die-cast aluminum engines. **Willys Motors, Inc., Toledo, Ohio, U. S. A.**

For the Direct Look

Industry and research are making more and more use of closed circuit television systems (IMD, Nov, p42). The new TE-6-9 camera shown right is a remarkably compact unit aimed particularly at a budget-minded industrial market (it is priced under $1200).

The camera works without separate control power units or bulky cable connections, and this flexibility should make it especially useful for remote or dangerous observation: for instance, inspecting the inside of nuclear reactors, observing boilers and furnaces in electrical power generation plants. There are many obvious applications too in materials handling, process monitoring, and quality control, as well as traffic control and in hospitals and schools. **International General Electric Corp., 150 E. 42nd St., New York 17, N. Y., U. S. A.**

Washer: Portable and Plastic

A plastic clothes washer that you can carry easily from place to place is a new departure in the U. S. appliance industry. The little washer at left, designed particularly for small apartment owners, travelers, and a few Americans who might want to have two machines, has done well in its test marketing.

Basically an electric motor surrounded by plastic parts, the machine weighs only 4.4 kg. but can wash and rinse up to 1.8 kg. of clothes in a basin or tub.

Four kinds of plastics—phenolic, melamine, nylon, epoxy—were used for the various parts of the unit. Molded off-white melamine forms the handle and cover; the motor has its inner wiring coated with epoxy to keep out water and dirt. Except for the molded phenolic impeller (lower half of the machine) all the moving plastic parts are nylon. Together the plastics are intended to make the machine not only light but durable, safe, and resistant to corrosion. **AMI, Inc., Grand Rapids, Michigan, U. S. A.**

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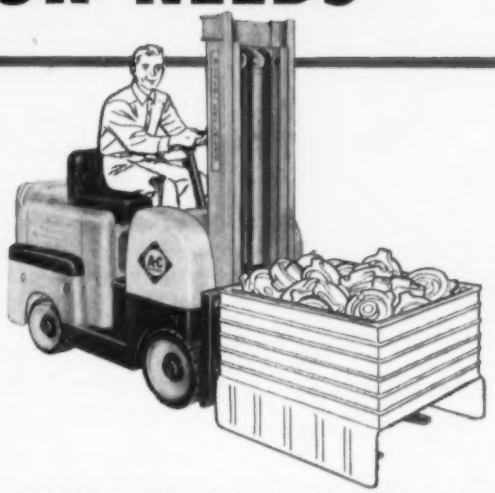

Fork Lift Trucks — Many models and sizes from 907 to 4,535 kg (2,000 to 10,000 lb). Choice of fuels — diesel, gasoline, LP gas. Solid, cushion or pneumatic tires. Conventional drive or torque converter with power shift. Complete line of interchangeable attachments.

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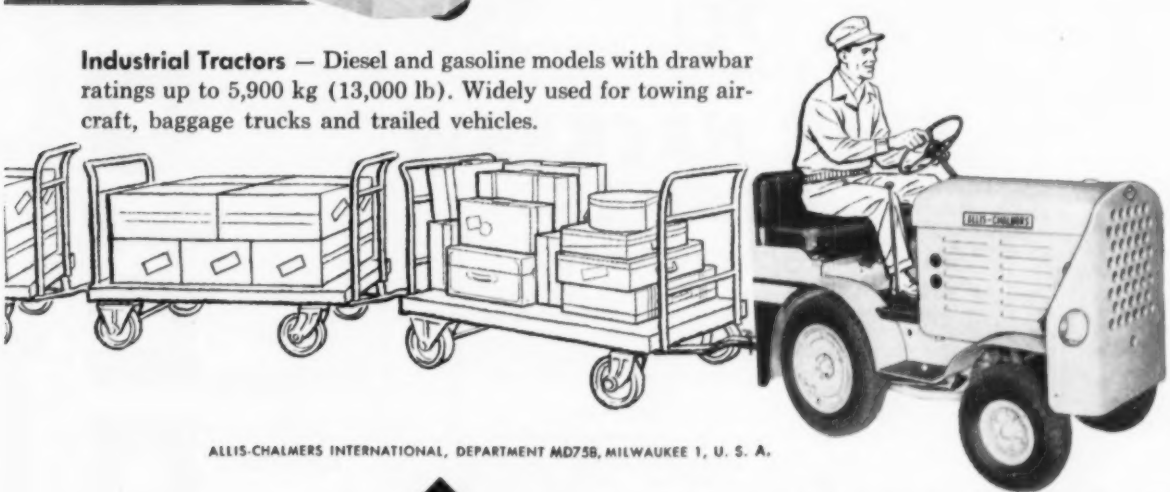
Industrial Tractors — Diesel and gasoline models with drawbar ratings up to 5,900 kg (13,000 lb). Widely used for towing aircraft, baggage trucks and trailed vehicles.



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Miniature Motor

A small single-phase induction motor has just been developed in Japan. It is especially suitable for precision machinery, electric clocks and electronic instruments, but the manufacturers claim that it can be applied to a wide variety of uses.

When put on the assembly line works, the instrument can electrically measure the quality, start the electric current, analyze up to the 11th high frequency wave, and find out any electrical imbalance that might lead to loss.

Special advantages of the motor —besides its economy—are that it is simple and sturdy in construction, and long-lasting because it is not equipped with a commutator. Measurements are: 32.5 mm. high, 24.2 mm. wide, 12 mm. long. **Eastern Electron Industry Co., No. 132 Taishi-do, Setagaya-ku, Tokyo, Japan.**

Makes Plastic Models

Manufacturers of prototype sections and machined parts may be able to use a small injection molding machine that has just come on the market. Only 36 kg. in weight, the machine is a simple one designed for flexibility rather than speed or low-cost production. It has a 220/240-v. a.c. heater, draws 250 watts, has a temperature range of 0 to 570 F. Both regular and linear polyethylene, nylon cellulose acetate, vinyls, and other thermoplastics can be formed. **S. R. Seymour & Co., Brook Road, Rayleigh, Essex, England.**

Midget Tape Recorder

A new tape recording machine that weighs 3.4 kg. and is smaller than a clock-radio can play up to two hours on a single reel of tape. It is a high-fidelity machine that comes with a microphone, tape, take-up reel and carrying case. **Societa Per Azioni Geloso, Viale Brenta 29, Milan, Italy.**

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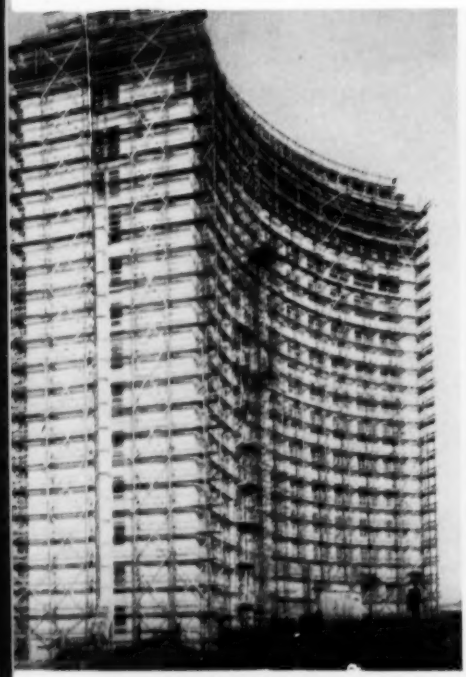

Now: Curved skyscraper . . .

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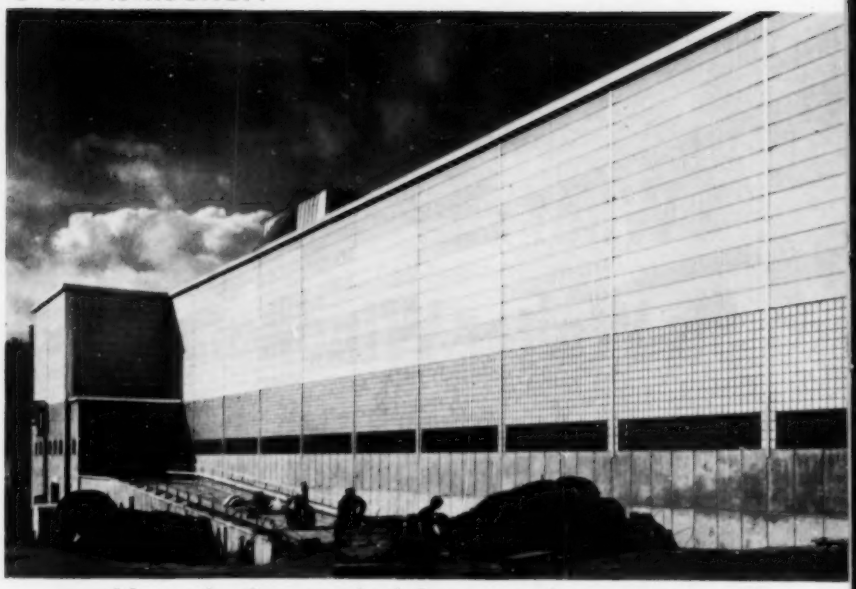


. . . a cable works that gets both beauty and convenience with an

Pioneers Give Swedish Factories

Influenced by many nationalities, Sweden's architects have come up with some startling innovations of their own in industrial building.

MOST BUSINESSMEN are acquainted with the Scandinavian school of modern furniture, an influence that has spread far and wide around the world. But they would have to visit Sweden to find the revolution that is taking place in industrial architecture there, and changing the face of the Swedish factory.

Radio tower swirls into sky.

To be sure, the vast capital expansion of the past decade—in Europe, North America, Latin America and elsewhere—has given industrial architecture a new lease on life, and ample opportunities to experiment with new styles. Advancing technology has made available new materials and methods, and major architects such as Frank Lloyd Wright, Le Corbusier, Eero Saarinen, and Oscar Niemayer have taken the opportunity to prove that a factory need not be a boxy, forbidding place.

Clearly, Swedish architects have been influenced by these masters. But it is equally clear in these pictures from *Figures*, published by the Swedish office-machine manufacturer ADDO, that they have evolved a distinct modern style.

They are both courageous and practical. Courage has been displayed in the use of new building materials, in efforts to move away from factories of the past, and in daring expressions of form and design. Practicality has meant seeing eye to eye with management—and a vow that beauty does not have to cost measurably more than ugliness.

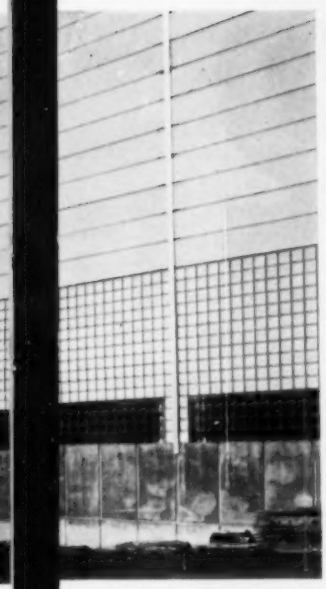
The use of new materials and techniques—building blocks, modular components, wide sections of glass—generally have been of help to builders. Basic structures go up in a fraction of the time that conventional methods required. Overall costs are favorable.

Sweden's geographic and climatic conditions dictated the first rule for the country's industrial architects: to provide a maximum of daylight so as to give the interior of factories and workshops a strong sense of the outdoors.

While giving this feeling of space, actual spaciousness has not been neglected. Design has had to satisfy the practical demands for each specific factory. With the ever-mounting cost of site areas, the effort to provide the space required in keeping with good design has taxed the ingenuity of the architects.

Before World War II most industrial buildings in Sweden followed the horizontal trend. But as building activity increased after the war, real estate prices began to move sharply upward.

Changes in real estate values created a minor revolution in arch-



accent on cement . . . . . and a paper-pulp plant that provides light, grace and ample space.

a New Look

itectural thinking. The trend turned toward the vertical. And the result is near-skyscrapers that now add much interest to the Swedish skyline.

The greatest challenge facing Sweden's small but active group of advanced industrial architects has been the interior of new plants. Sociological aspects have played a strong hand, with emphasis on comfort and cleanliness, and a continuous war on monotony. Architects have found the answer in easy-to-clean and noiseless floors, color-conditioned walls and ceilings, and spotless machines painted in suitable shades.

Swedish ingenuity has turned a prosaic item such as an industrial water tower into a structure of grace and distinction. At one plant, in central Sweden, the tower has been crowned with a modern restaurant, where visitors can lunch with a view of the factory buildings.

A shipyard at Malmo combines all of its administrative units into 18 floors of a glass, steel, and concrete skyscraper (top left photo, opposite page) that is laid out in a gentle arc. The curved building

A many-faceted cardboard factory—are its lines too modern?

offers an appealing contrast to the background of giant cranes circling the busy docks.

Can builders go too far with their modernism in industrial architecture? Will such structures age as well as conventional plants? Some engineers are afraid they will not; but others say these new buildings can never do any worse than their box-like predecessors. The answer will be found in Sweden, in another look at these modern structures some 10 or 20 years from now. ●

In Construction

● **GEODESIC DOMES — a novel and inexpensive way to roof anything** from a factory to a convention hall—are spreading like wild-fire across the U S industrial landscape. Over 70 companies now are licenced by R. B. Fuller to use the scheme he spent 30 years in developing. Among them is Kaiser Aluminum & Chemical Corp., which has begun mass-production of domes from kite-shaped aluminum panels. Kaiser domes will be covering banks, service stations, airport terminals, perhaps even homes. Union Tank Car Co., also working under Fuller patents, recently has completed a welded-steel geodesic dome with a free-span of about 120 meters, raised at the center about 40 meters, to cover a railroad-car repair shop. Geodesic domes often are put together in a single day, offer maximum strength with minimum structural weight. (*Business Week, May* 10, *p* 112)

● **PLASTIC DRAINAGE PIPE now can be formed and laid at a rate of 2.5 kilometers per hour,** and at a fraction of the cost of conventional methods. The advance is in a machine developed by the U. S. Department of Agriculture that digs trenches, forms pipe from plastic sheet, then backfills. The tractor-operated machine forms a strip of vinyl plastic into an arch 5 centimeters wide by 6 centimeters high, and feeds this through a chute into the trench. Coarse sand drops down another chute to provide a porous passage above the drain. (*Engineering News-Record, May* 15, *p*69)

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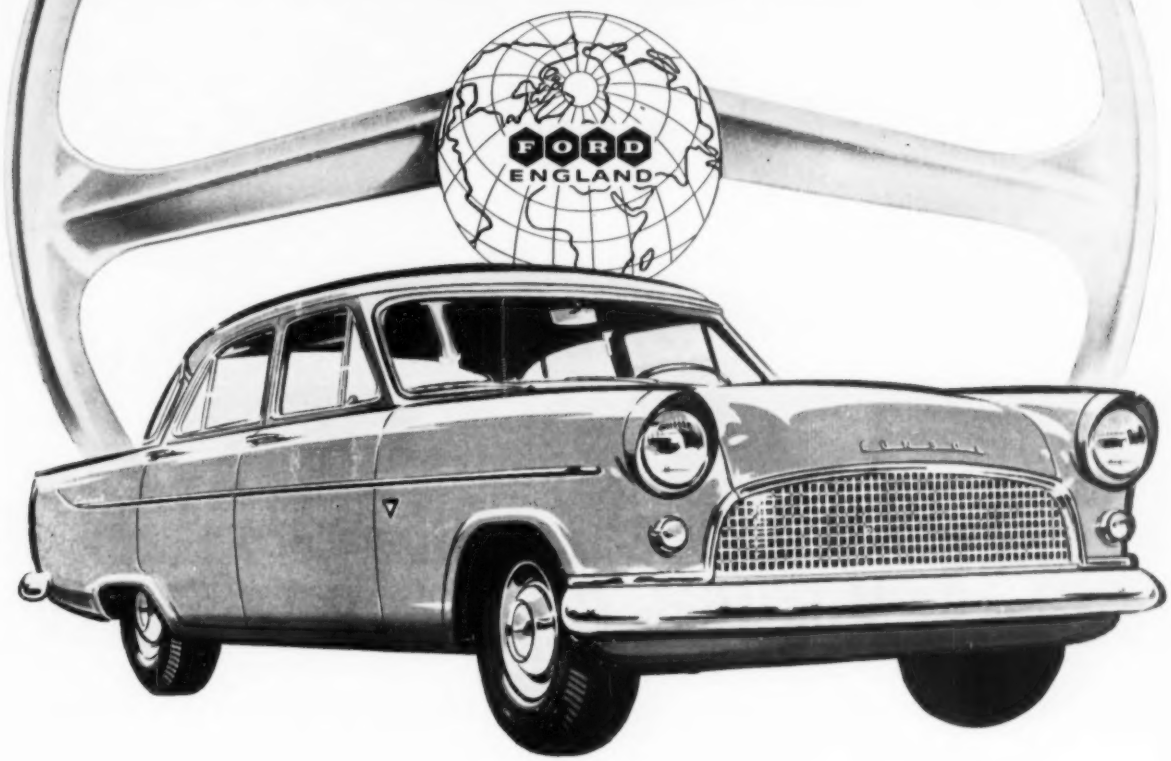

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LOOKING AHEAD

Technology

Year-Round Supply of Green Grass

Hydroponics—the science of growing plants without soil—has been put to work by an American farmer for growing four tons of grass a month to feed his cattle. The trick is done with a seed incubator (developed by Buckeye Corp.) consisting of: a heat pump, two banks of infra-red lamps, and a small recirculating water pump. Seeds germinate in trays, 60 trays producing about a ton of grass a week. Initial cost of the 60-tray unit is about $2,900; operating cost, about $12-$14 a ton of grass. (Electrical World, May 12, p108)

Tape-Control Serves Entire Production Line

A numerical-control system recently installed by U.S.A.'s Hughes Aircraft Co. operates a series of machine tools by punched tape and digital computers. The novel system—the first to operate an entire line of intricate machine work—controls milling, drilling, and boring machines. Advantages: One man operates the entire line; set-up is virtually eliminated; tooling is just about halved; several different parts can be made simultaneously. (Factory Management & Maintenance, May, pA-69)

British Process Makes Leather Waterproof

Rubber and composition shoe soles are now being heat-molded to leather uppers without stitches or seams in a process developed by C. & J. Clark, Ltd., England. The result is a shoe that is substantially waterproof. The uppers are treated with silicones and other water-resistant chemicals. The process first will be used in the manufacture of industrial work shoes. (Business Week, Apr. 26, p136)

An Electronic Look at the Human Brain

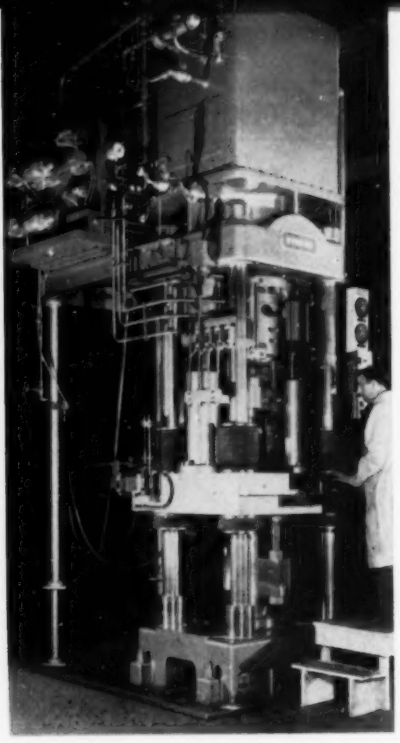
Scientists of the Soviet Union have devised an electronic helmet that enables them to study activity of a patient's brain. Electrodes in the helmet create luminous points on a television-type screen. When a patient wearing the helmet sits quietly in a dark room, the brightness of all "blips" on the screen is about equal. But if the patient is asked, for example, to divide 1,000 by four, some points go out and others become brighter or blink. (Electronics, May 16, p33)

Fully Formed Mesh Made in Continuous Process

A new process developed by Plastic Textile Accessories, Ltd., England, turns out fully formed plastic mesh, the intersecting strands fused in one piece during extrusion. By changing the shape of the die, it is possible to turn out a wide variety of mesh-type designs. Possible applications include radio grills, filters, wire and cable coverings. Nylon, polyethylene, and other synthetics may be used. (Product Engineering, May 12, p19)

Gas-from-Coal Plant Slated for Scotland

A plant soon will be built in Westfield, Fife, Scotland that will convert low-grade coal into gas for home and industrial use. Degasification equipment developed by Lurgi Co., Germany, will be used (IMD, Feb., p43). The plant —the first in the United Kingdom—is expected by British officials to cut down fuel imports and hold gas prices in line. (The Times Review of Industry, Apr., p24)



Above is a sample of the diversified product of powder metallurgy, produced by presses like the one at right. New technical advances are pointing the way to . . .

Bigger and Better Parts from Powder

FIVE THOUSAND YEARS AGO, the Egyptians were using a primitive version of powder metallurgy to shape and compact their tools. Today, a related and much-improved technique is becoming one of management's most versatile manufacturing aids.

How versatile was apparent at a meeting of the U. S. A.'s Metal Powder Assn. a few weeks ago. Larger and better metal parts are being made—at lower cost and in an increasing variety of metals. One dramatic example involved the new technique of "slip-casting."

The story was told of a stainless steel plate which, fabricated by conventional methods, would have required a $6,000 die, and a 1200-ton compacting press. Yet the part was slip-cast in a $30 mold with no press whatsoever required.

To be sure, powder metallurgy still has a long way to go in winning the unqualified approval of the world's design engineers. Yet the demands of these same engineers give powder metallurgy its expanding and exciting prospects. The engineers are finding that conventional metalworking techniques —casting, forging, machining— are not always the most economical answer for making complex components. In powder metallurgy, they have a technique that can control the density of parts, offer new physical properties, and shape these parts with a minimum of labor.

The process is simplicity itself. Iron, copper, or other metal powders, generally combined with a lubricant, are compacted between punches in a die at extremely high pressure—about five to seven tons per square centimeter.

The "green" briquettes then are transferred to a sintering furnace and heated to a temperature far less than would be required to melt the metal. Sintering converts the fragile briquette into a strong metal part. The final product is a component that looks like solid metal, is lighter, and has many improved and unique properties.

Design engineers find a variety of advantages in using powder metals. Parts can be made to exact dimensions within close tolerances. Intricate cams and gears can be formed with little or no costly machining. One-piece production takes the place of cutting two or more pieces out of stock and then assembling them together.

All of this means savings in material and labor. Powder-metal parts normally require no machining and assembling, and result in no wasteful scrap and few rejects.

Modern powder metallurgy began in Germany some 30 years ago, but got off to a slow start due to lack of proper materials and equipment. Various refinements were introduced in Sweden, and later in the U. S. A., where output has more than tripled in the last six years. Today rapid strides are being made in Japan and Russia, as well as in the U. S. A. and Europe.

The first application of powder metals was in the manufacture of self-lubricating bearings. The bearings are impregnated with a lubricant after sintering, and hold 10% to 40% of oil by volume. The pores of the bearings act as oil reservoirs, releasing the lubricant as the bearing gets warm and reabsorbing it as the metal cools.

Powder metals now go into an endless variety of small gears, bushings, cams, bearings, valves. Some 35% to 40% of U. S. output ends up in the automotive industry; besides self-lubricating bearings, cars use powder-metal timing gears, door cams and latches, oil pump gears, contact points, clutch

facings. Another 30% goes to appliance manufacturers, as components for lawn mowers, washing machines, electric shavers. Important quantities of powdered metal parts also are used for hardware, locks, office-machine components.

The swift progress in powder metallurgy during the past few years has been made possible by the development of improved and standardized metal powders, and the building of larger and better presses for compacting the powders into desired shapes. Fabricators at first used ordinary tableting machines. Now firms like U. S. A.'s F. J. Stokes Machine Co. are building especially-tailored hydraulic powder-metal presses (IMD, Feb, p 50) capable of exerting pressures of 300 to 500 tons on small areas.

Pacing these developments has been the introduction of various new procedures for broadening the range of powder metallurgy. Infiltration of iron-powder parts with molten copper is giving them new strength and wearability. Rolling of metal powders into sheet and strip, as well as slip casting, now is in the offing.

Infiltration — Close control of physical and mechanical properties now is achieved by infiltrating iron-powder porous parts with molten copper or brass. The result is a 100% dense metal part with great strength, uniform quality, and optimum wear characteristics.

Infiltrated powder-metal parts have moved quickly from the laboratory into commercial use. Gears made with the process withstand high stress and oscillating loads. A typical application is in the gear train of an automatic washing machine where four infiltrated gears, which take the main brunt of shock loads, have replaced machined steel.

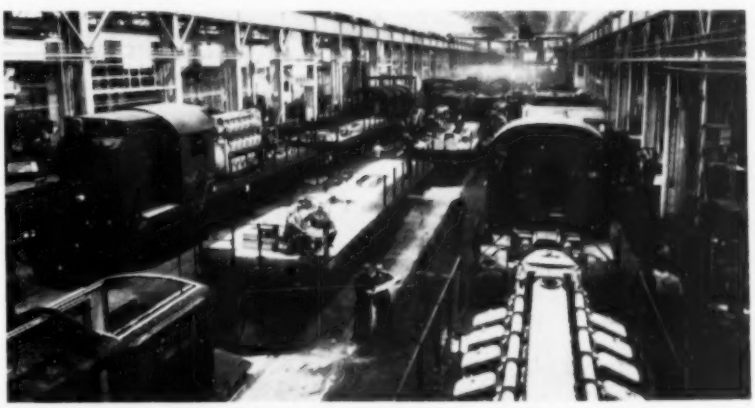
Strip Rolling — Metal powders also can be compacted between rollers into continuous strip or sheet. A machine for this purpose recently has been made available to several U.S. laboratories and manufacturers by the Stanat Manufacturing Co.

Though still in pilot-plant use, the process is said by experts to have a broad future. Both ferrous and non-ferrous metal powders can be cold-rolled in this fashion. One firm is reported to be rolling copper powder into strip for use on automobile radiators.

Slip Casting—This process, developed by Dr. Henry H. Hausner, has experimentally produced intricate stainless steel parts that are over a half meter long, compared to the 10-cm maximum now pressed. And researchers are trying out the technique with such varied metals as tungsten, molybdenum, chromium, and stainless steel.

Powder metals in this case are handled in a slurry, which is poured into plaster-of-Paris molds. The plaster absorbs the slurry, leaving a fragile crust of metal for sintering. Turbine blades are one of the proposed applications.

The powder-metal industry has embarked on a broad educational program to acquaint engineers and designers with new developments in the field. Experts are looking to the electronics and electromechanical industries as huge markets for powder-metal parts in the next ten years. To coordinate technical and marketing developments on a global scale, the first International Powder Metallurgy Conference is being planned for June 13 to 15, 1960, in New York. ●



STRAIGHT-LINE assembly—an improved way to build or rebuild locomotives.

New Diesels for Old

FIFTEEN-YEAR-OLD DIESEL LOCOMOTIVES can be made to operate like new at the modernized works of Alco Products, Inc., an American firm that today supplies the world with many main-line locomotives. A "rebuild shop" occupies one wing of a production plant that has been relocated and reconstructed at a cost of $4-million.

The main feature of the plant is a straight-line production system, the only one in the world for the manufacture of big diesels. New units move along the multi-unit line, progressing from basic steel plate into painted and ready-to-run locomotives. Joining the line are the reconditioned frames of used locomotives from the "rebuild shop."

Rebuilding means complete disassembly. A unit is stripped to its basic structural frame. Parts are cleaned, sandblasted, tested, painted. Unsound parts are discarded, and new parts take their place. The locomotive is then reassembled like a new unit.

The business of rebuilding fits in conveniently with new production (Alco is building diesels for Spanish, Pakistani, and Argentine railroads). New parts are available as needed, the same testing procedure can be used, and the plant's 13 huge cranes handle both new and old units.

U.S. railroads—already almost completely dieselized—have taken advantage of the rebuilding operation to put their rolling stock in top condition at about half the cost of purchasing new locomotives. The same service now is being made available in other countries —Australia, Brazil, India are examples—with Alco advising local companies on setting up similar "rebuild shops." ●

• Machines That Translate

MATHEMATICIANS AND LINGUISTS have for 10 years been attacking the problem of translating from one language into another by machine.

Now, a major technical advance is in the making. A team of U.S. scientists at the Harvard Computation Laboratory soon will finish putting a 10,000-word bilingual electronic "dictionary" on magnetic tape. The machine will give a word-for-word translation of Russian into English.

Harvard's success—and similar advances made in Britain and Russia—points up both the progress and difficulties in mechnical translation. Word-for-word conversion may give the gist of an article—and be useful—but it does not give an accurate, reliable copy of the original. Complete translation would mean success on three levels: lexical, syntactic, and semantic.

Lexical, or word-for-word, translation by data-processing machine is being done at several university and private laboratories. Words keyed to their equivalents in another tongue are stored on a memory drum. An operator types the text to be translated on to punch cards, which are fed to the machine. Input is compared with data on the drum, and the output to the printer appears as a series of translated words.

Though it has meant the concerted effort of many specialists, such a translation represents only half an answer. The end product is no more than what an unskilled person would produce by laboriously consulting a two-language dictionary. Words remain in the order of the original script. Tense, idiom, shadings of meaning are ignored.

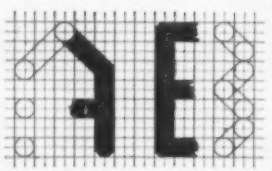
Syntactic translation—an extremely complex task for a machine—involves putting rules of grammar as well as words on the memory drum. Such rules are tagged to certain words in the machine, and they instruct the machine on how these words relate to others. Scientists at Georgetown University, Washington, have translated limited-vocabulary texts by using six major rules of syntax.

Here is how it works. The Spanish words *año económico* might be translated word for word as "year: economical/thrifty/fiscal." With a rule-sign on the word *económico*, however, the machine is instructed to look back for a rule-sign attached to *año* and to reverse the two Spanish words. This may lead to the proper translation: "fiscal year."

Semantic translation means coping with the varied meanings of words as they are converted into another language. The several English equivalents for the Spanish adjective *económico* — economical, thrifty, fiscal—illustrate the point. Further rule-signs would be required to pin-point meaning.

Will the ideal of exact translation ever be realized? Many experts are skeptical. Those that say yes, say it will take 20 years or more, and will entail new machines with bigger memory drums as well as extensive studies into languages and the mathematical probabilities of meaning. For the present, word-for-word translation—perhaps with some syntax guidance—may find a place in commerce. (*Electronics, Mar.* 21, *p*26; *Product Engineering, Mar.* 24, *p*30)

• Machines That Read



A B C D E F G H I J
K L M N O P Q R S T
U V W X Y Z
1 2 3 4 5 6 7 8 9 0

MAN'S READING also can be done by machine, and this prospect is much closer to reality than most businessmen realize. Machines can not do your recreational or technical reading, but they will scan such routine items as mail, checks, bills of lading, invoices. And they will take action in accordance with what they read.

Reading machines are much further advanced than translating machines. They are simpler in principle, and they will have much more bearing on the manager's business and everyday life.

Machines already are available that read a single font of type by photo-electric cells. Other more complex units are under development that read several fonts, but such machines have to be reset each time a new font appears. What is needed now is a standardized type, which could be used by many larger banks, commercial firms, manufacturers, and government agencies.

A font suggested for standardization is shown above, and is now in use on some U. S. business machines. It is based on a 5 by 7 grid. Each character is made by spotting a given number of the 35 available squares. The font looks like conventional letters, but offers a 35-unit code for easy mechanical scanning.

Reading machines will become commonplace in commerce once standardization of type becomes general. They will eliminate much office routine, lead to mechanized filing and sorting, and speed up the handling of mail, checks, and invoices.

Banks are looking toward such machines to aid them in handling the ever-increasing flow of checks. They expect to print all major parts of a blank check with the standardized type. Checks then could be automatically processed as soon as they reach a bank.

Automatic post office machinery now is being developed in both the U. S. A. and Britain that will welcome the standardized type. These high-speed machines—the one under test in the U. S. A. is capable of sorting 600 letters a minute—at first will be push-button-controlled by operators. But reading machines will take the place of human sorters once the machines are commercially available. (*Product Engineering, Apr.* 28, *p* 77) ●

Russian Steam Gets New Tests

STEAM for driving turbines must be extremely pure. Minute inorganic impurities—measured in parts per million—foul turbine blades and lead to shutdowns.

The Russians recently have been doing some pioneer work in developing techniques for measuring steam. The difficulty is to get a representative sample of steam moving from the boiler; droplets containing the impurities normally are not uniformly distributed.

Two Russian institutes have developed methods for redistributing droplets so that a representative sample is obtained. They are similar to a technique reported in the U. S. A. in 1950, but not yet placed in industrial operation.

Soviet engineers also are reported to be using radioactive isotopes in the tracing of impurities in steam, a method that is being studied in Germany and the U. S. A. The procedure is to add isotopes of the impurities normally found in the steam to the boiler water. The radioactivity of the entire steam flow is then measured. (*Technology, May, p* 78) ●

How to Repair Problem Floors

AN INEXPENSIVE WAY to keep factory floors clean and resistant to impact, acids and alkalis has just appeared at several food-processing plants in the U. S. A. Floors are given a thin coating of a material known as Monile, developed by Master Mechanics Co.

The material is prepared by mixing a copolymer liquid with a selected aggregate in an ordinary cement mixer. It is poured onto the old floor and troweled to the desired finish. It can be used for repairing both wood and concrete floors.

The coating, which cures quickly, compares in strength and appearance with ceramic materials. Factories have used it on loading docks, ramps, and processing floors. They report that it is highly resistant to boiling water, fats, sugars; heavy trucking does no damage. (*Food Engineering, May, p* 113) ●

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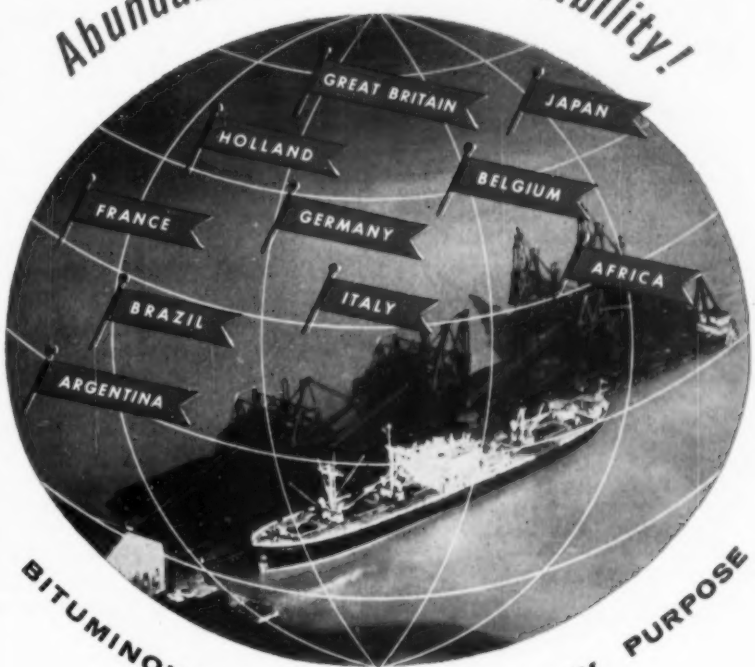

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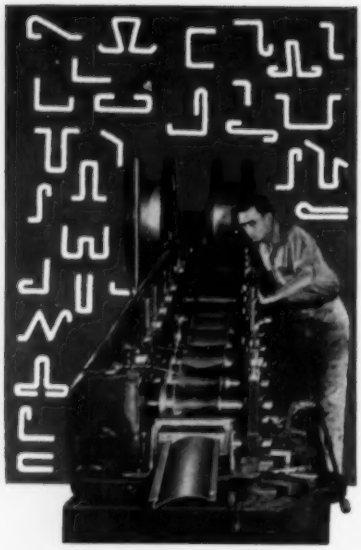

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Sparks Fly in Diamond Mart

Bort may have to move over, as man-made diamonds explore new and old industrial uses.

ARE DIAMONDS headed for new industrial uses? The question is raised by J. D. Kennedy of the U. S. A.'s General Electric Co. The firm last year pioneered the production of synthetic diamonds (IMD, Jan., p 66), and has just announced that it is making quantities available to world markets.

Kennedy thinks diamonds— both man-made and the natural crushing bort it resembles—have a wide range of unexploited applications. Most diamond bort now goes into grinding cemented carbides; further quantities are used in saws for cutting stone and concrete.

"Is there something so basically wrong with diamond as an abrasive that it can find only such limited use?" Kennedy asks, in a report in *Purchasing Week*. He suggests diamonds for grinding steel and alloys, for surfacing plate glass, for sawing limestone, marble and granite.

The American expert's words come during unsettled times for the international diamond industry. Sales last year set a new record, but the 1958 demand for both gems and bort has been weak.

Though concerned about the market, officials of the De Beers diamond syndicate do not appear too worried about competition from the synthetic product, according to *The Economist*. They feel that General Electric's laboratories can not produce a product that compares favorably with the better grades of industrial bort, and that production of synthetic gem stones is "entirely impracticable."

The U. S. firm has no plans for producing gems, but it claims its product is superior to natural bort for many industrial applications. Man-made diamonds, G. E. states, are more rough-surfaced and more friable than the natural product. The synthetic's friability allows it to wear away gradually on a grinding wheel, and not fly off the wheel and leave an empty pocket.

Though natural bort has the cost advantage—about $2.80 per carat, against $3.50 for the synthetic—G. E. has great confidence in its product. Short supply of diamonds in the past has hurt the development of new uses. The man-made product now will help stimulate application research. ●

Tiny Batteries Offer Big Power

TINY BATTERIES are moving into industry, bringing with them 95 volts or 1.5 ampere-hours of electricity in a space no bigger than an acorn. Such batteries already are powering tape recorders, hearing aids, wrist watches, as well as timers and control devices.

Many of these high-powered midgets are merely improvements of existing types, made possible by flat construction and the use of highly refined materials. An example is the indium cell developed by U. S. A.'s Elgin National Watch Co. for wrist-watch and instrument use. It is essentially the same as a mercury cell, using a cathode of mercuric oxide, but substitutes indium for the zinc anode to gain efficiency and sustained output.

Others represent radically new concepts in power source. Among these are solid-electrolyte and nuclear batteries. The solid-electrolyte battery is a true "dry" cell, operating by diffusion of ions through a solid rather than by movement of particles through a liquid or gas.

Nuclear batteries use radioactive isotopes as their power source. Action is continuous, and the battery lasts as long as the isotope in use.

Looking into the future, it is hard to see how batteries can become much smaller—though one firm is developing a nickel-cadmium battery that is only one centimeter in diameter and half a centimeter thick. New materials are being pressed into use, and the prospect is for more compact power for the instruments and devices of tomorrow. (*Product Engineering, May 12, p 72*) ●

Publications Digested

American Automobile
American Letter
American Machinist
Aviation Week
Business Education World
Business Week
Chemical Engineering
Chemical Week
Coal Age
Construction Methods & Equipment
Control Engineering
El Automovil Americano
Electrical Construction & Maintenance
Electrical Merchandising
Electrical West
Electrical Wholesaling
Electrical World
Electronics
Engineering & Mining Journal
E&MJ Metal & Mineral Markets
Engineering News-Record
Factory Management & Maintenance
Fleet Owner
Food Engineering
Industrial Distribution
Ingenieria Internacional Construccion
Ingenieria Internacional Industria
Metalworking Production (London)
National Nucleonics
Petroleum News
Petroleum Week
Power
Product Engineering
Purchasing Week
Textile World
Today's Secretary

McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y.

American Builder, Marine Engineering, Railway Age, Railway Track and Structures, Railway Locomotive and Cars, Railway Signaling & Communications
Simmons-Boardman Publishing Corp., 30 Church St., New York 17, N. Y.

American Business
Dartnell Publications, Inc., 4660 Ravenswood Ave., Chicago 40, Ill.

Architectural Record
F. W. Dodge Corp., 191 W. 40th St., New York 18, N. Y.

Banking
American Bankers Association, 12 E. 36th St., New York 16, N. Y.

Business
Business Publications Ltd., Mercury House, 109-119 Waterloo Road, London, S. E. 1.

Ceramic Industry
Industrial Publications, Inc., 5 South Wabash Ave., Chicago 3, Ill.

The Controller
Controllers Institute of America, Inc., Two Park Ave., New York 16, N. Y.

The Economist
The Economist Newspaper, Ltd., 22 Ryder St., London, S. W. 1.

Harvard Business Review
Harvard University, Soldiers Field, Boston 63, Mass.

Heating, Piping & Air Conditioning
Keeney Publishing Co., 6 N. Michigan Ave., Chicago 2, Ill.

Industrial Marketing
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Metal Progress
American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio

Modern Packaging, Modern Plastics
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The Paper Industry
Fritz Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill.

Petroleum Press Service
Petroleum Press Service, 91 & 93 Bishopsgate, London, E. C. 2

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Temple Press, Ltd., Bowling Green Lane, London, E. C. 1

Printer's Ink
Printer's Ink Publishing Co., Inc., 205 E. 42nd St., New York 17, N. Y.

Rubber and Plastic Age
Rubber and Technical Press, Ltd., Gaywood House, Great Peter St., London, S. W. 1

Sales Management
Bill Brothers Publishing Corp., 386 Fourth Ave., New York 16, N. Y.

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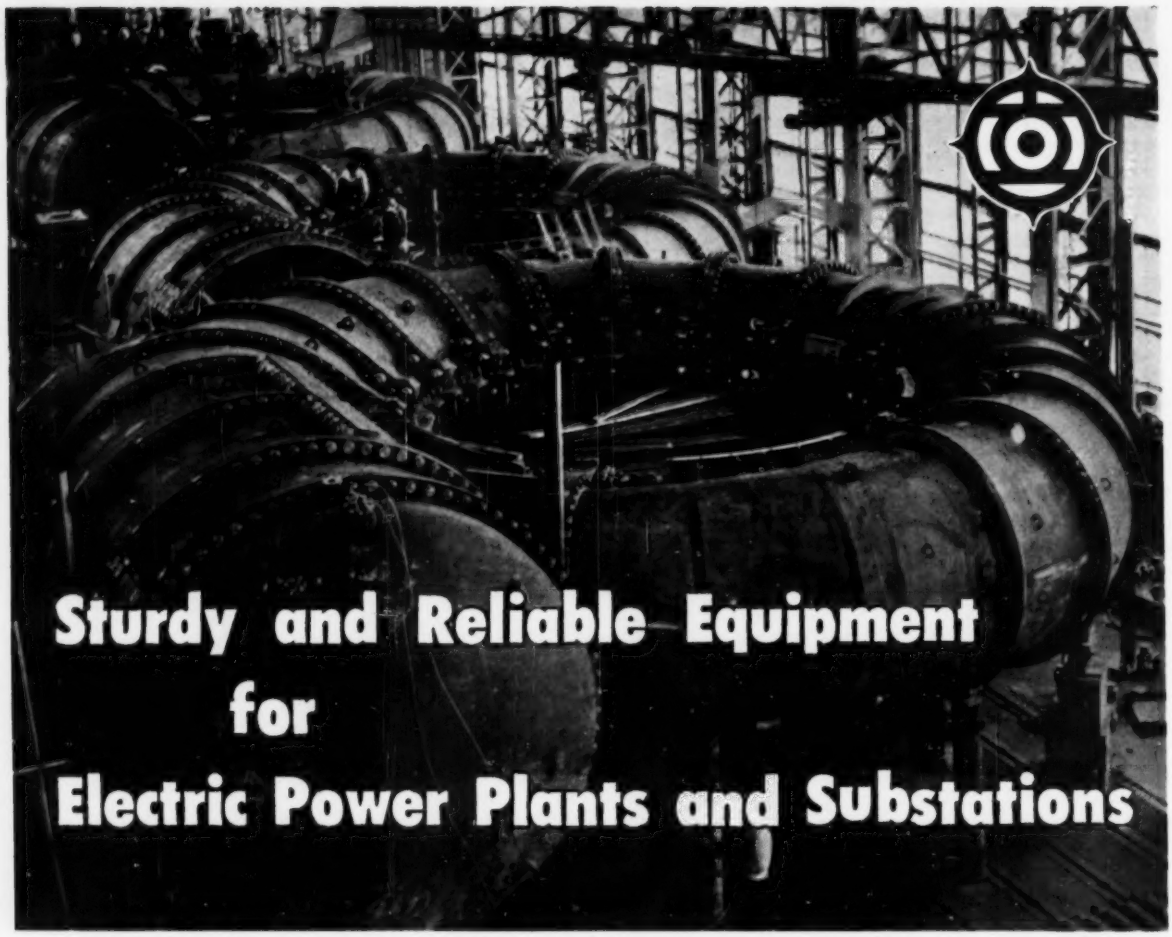

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Writing a Technical Report?

Better Report Writing is intended to help the business author—be he manager or engineer. It tells how to combat many of the faults of technical writing, discusses structure, punctuation, clarity and emphasis. 231 pages; $4.75. (Reinhold Publishing Corp., 430 Park Avenue, New York 22, N. Y.)

Reports from the National Planning Association

NPA is an independent, non-profit organization of U.S. business, labor, farm, and professional groups dedicated to strengthening private enterprise; some of its staff reports make worthwhile reading for executives everywhere. For example: fifteen case studies on industrial relations; six studies of U.S. businesses operating internationally; a series on technical cooperation in Latin America; a series on atomic power prospects in Japan, Brazil, India, Italy, Israel. (NPA, 1606 New Hampshire Ave., N. W., Washington 9, D. C.)

Simplified Work Study Manual

Introduction to Work Study was prepared to serve as a manual for supervisors and engineers being trained in work study. It explains—with examples—the principles involved. 349 pages; $3.50 or 21s. (International Labor Office, 917 15th Street, N. W., Washington 5, D. C. or International Labor Organization, Geneva, Switzerland.)

Latest Advances in Chemical Technology

New Processes and Technology is a handy review of the most significant technical developments in the chemical process industries, 1956-57. Almost 300 new processes are described. 14 pages; $1.00. (International Management Digest, 330 West 42nd Street, New York 36, N. Y.)

All About Business Films

A Guide to Business Films gives helpful information on planning, producing, and distributing successful sales, promotion, and training films. Reprint: 25¢. (Advertising Requirements, 200 East Illinois Street, Chicago 11, Illinois) . . . Annotated Bibliography of Audio-Visual Aids for Management Development Programs provides a descriptive list of U. S. motion pictures, filmstrips, tape and disc recordings, and miscellaneous training aids available to management. 24 pages; $3.00. Research Service, 353 W. 57th Street, New York 19, N. Y.) . . . McGraw-Hill has prepared a series of six color motion pictures entitled The Office Supervisor's Problems. (Text Film Dept., McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y.)

Bulletins from Industry

Modern manufacture of pipe and tube is described in a 64-page handbook, Electric Resistance Weld Tube Mills. (The Yoder Co., 5500 Walworth Avenue, Cleveland 2, Ohio) . . . Catalog 571 lists all types of fire fighting equipment and accessories available to industry. (American LaFrance Corp., Elmira, New York) . . . A fully-illustrated brochure describes the Model MC-400 Desk-Side Analog Computer. (Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.)

YOU

Personal Affairs

Getting the Most from a Business Trip Abroad

Are you thinking about taking a business trip abroad? Unless you do it frequently—say, several times a year—take some time off for careful advance planning.

First of all, reminds *Business* magazine, check that your passport is valid and that your international inoculation certificate is in order. For nations that require visas, write to the local consulate for application forms. Order at least two dozen copies of your passport photograph. They will disappear quickly when you start filling out forms.

Plan to drive at all? Your local automobile club will help you get an international driver's license.

As soon as you formulate tentative plans, write letters to all the people you want to see explaining the purpose of your trip. You will want to keep yourself as flexible as possible at this point—it is usually better to make specific commitments in a second round of letters.

Keep a file on the places you will visit. Chambers of commerce usually can supply general literature. A world commercial atlas will come in handy also. You might want copies of tariffs, import regulations, freight rates, shipping time, etc. Your bank can probably be of immense help.

At some point, it is a good idea to convert this information into a memorandum, prepared by yourself or an assistant. Then you will have the information organized according to your own needs.

Now compile a second memorandum on your company's activities in the area you will visit: present, past, and possible future importers and distributors; brands and specifications, quantities; terms and commissions. Include notes on the background of any disputes, and a summary of the existing situation pending orders, etc.

Sales Management magazine suggests that you prepare your own marketing map with crayons. For instance, outline areas of business interest and marketing outlets (buying offices, factories, wholesalers).

Your plan of attack depends on your objectives, of course. A fact-finding trip is one thing, a sales trip quite another.

If your trip is fact-finding, it is a good idea to work up a special report form that includes the points you want to cover. Keep it simple.

If your firm has a sales manager or a salesman in the territory, take care not to undercut his prestige and importance. Unless there is a clear understanding or just cause, it is seldom wise for visiting executives to preempt sales enquiries or negotiations.

If you intend to conduct business on your trip, it is well to anticipate problems. Try to clarify specific questions before you leave home.

"If X in Caracas maintains his disinterested attitude, may I offer the agency to Y?"

"If Z in Nairobi insists on 90 days' credit, are we willing to concede?"

Arrangements worked out in the field should be put in writing—if not in a formal document, at least in an "aide memoire."

A word of warning on carrying samples: They can cause considerable delay and sometimes a drain on cash resources at ports of entry, unless you are travelling within a customs union. If possible, send samples ahead to a contact in plenty of time to clear customs.

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